

# ALL-HAZARD MITIGATION PLAN

*Bonner County, Idaho*

*and the*

*Incorporated Cities of Clark Fork, Dover, East Hope, Hope,  
Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint*



Prepared for:

Bonner County  
Department of Emergency Management

Prepared by:



**TETRA TECH**

APRIL 2010

**ALL-HAZARD MITIGATION PLAN  
FOR  
BONNER COUNTY, IDAHO**

**and the**

**INCORPORATED CITIES OF  
CLARK FORK, DOVER, EAST HOPE, HOPE, KOOTENAI, OLDTOWN,  
PONDERAY, PRIEST RIVER, AND SANDPOINT**

***Prepared for:***

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**LIST OF ACRONYMS**

AHM	All-Hazard Mitigation
BLM	U.S. Bureau of Land Management
BNSF	Burlington Northern-Santa Fe
BOR	Bureau of Reclamation
CDBG	Community Development Block Grant
cfs	Cubic Feet Per Second
CRS	Community Rating System
DEM	Department of Emergency Management
DMA	Disaster Mitigation Act
EAP	Emergency Action Plan
EF	Enhanced Fujita
EMPG	Emergency Management Performance Grants
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
FIRMS	Flood Insurance Rate Maps
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
GIS	Geographic Information Systems
HMGP	Hazard Mitigation Grants Program
HPAI	High-Pathogenicity Avian Influenza
IBHS	Idaho Bureau of Homeland Security
IDL	Idaho Department of Lands
ITD	Idaho Transportation Department
LEPC	Local Emergency Planning Committee
NCDC	National Climatic Data Center

**LIST OF ACRONYMS (continued)**

NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
NTSB	National Transportation Safety Board
NWS	National Weather Service
OEM	Office of Emergency Management
PDM	Pre-Disaster Mitigation
PSIC	Public Safety Interoperable Communications
RFC	Repetitive Flood Claim
SHELDUS	Spatial Hazard Events and Losses Database for the United States
SRL	Severe Repetitive Loss
UBC	Uniform Building Code
USGS	U.S. Geological Survey
WUI	Wildland Urban Interface

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## 1.0 INTRODUCTION

The effects from natural and man-made hazards directly impact the safety and well being of Bonner County residents. Historically, County residents have dealt with wildfires, winter storms, floods, high winds, landslides, and hazardous material spills. While most hazards cannot be eliminated, the effects from them can be mitigated. Bonner County, working in conjunction with Idaho Bureau of Homeland Security and Tetra Tech Inc. (Tetra Tech) prepared this All-Hazard Mitigation (AHM) Plan (the Plan) to help guide and focus hazard mitigation activities. The Bonner County AHM Plan profiles significant hazards to the communities and identifies mitigation projects that can reduce their impacts. The purpose of the Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural and man-made hazards. The Bonner County AHM Plan includes resources and information to assist local government, organizations, County residents, and others interested in participating in planning for natural and man-made hazards. The AHM Plan provides a list of mitigation projects that will assist Bonner County in reducing risk and preventing loss from future hazard events.

### 1.1 AUTHORITY

The Disaster Mitigation Act (DMA) of 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 – Mitigation Planning. It requires all local governments to have an approved AHM Plan in place to be eligible to receive Hazard Mitigation Grant Program project funding.

Bonner County and the incorporated towns of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River and Sandpoint have adopted this AHM Plan. These governing bodies have the authority to promote sound public policy regarding natural and man-made hazards. Copies of the signed Resolutions from these jurisdictions are included as **Appendix A**. The Plan was adopted at the regularly scheduled meetings of the Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint town councils, and at the meeting of the Bonner County Commissioners, all of which were open to the public and advertised through the communities' typical process for publicizing public meetings. Upon acceptance by the Federal Emergency Management Agency (FEMA), and adoption by the local jurisdictions, Bonner County and the other Plan signatories will gain eligibility for local mitigation project grants and post-disaster hazard mitigation grant projects.

### 1.2 ACKNOWLEDGEMENTS

Many groups and individuals have contributed to development of the Bonner County AHM Plan. The Idaho State Hazard Mitigation Officer, Bonner County Board of County Commissioners, and Bonner County Department of Emergency Management provided support for all aspects of plan development. The AHM Plan Steering Committee met on a regular basis to guide the project,

prioritize mitigation projects and review draft deliverables. The Local Emergency Planning Committee (LEPC) and BONFIRE wildfire mitigation group were involved in developing mitigation strategies. The local communities participated in the planning process by completing surveys and attending public meetings and contributed to Plan development by reviewing and commenting on the draft Plan.

### 1.3 GEOGRAPHIC SETTING

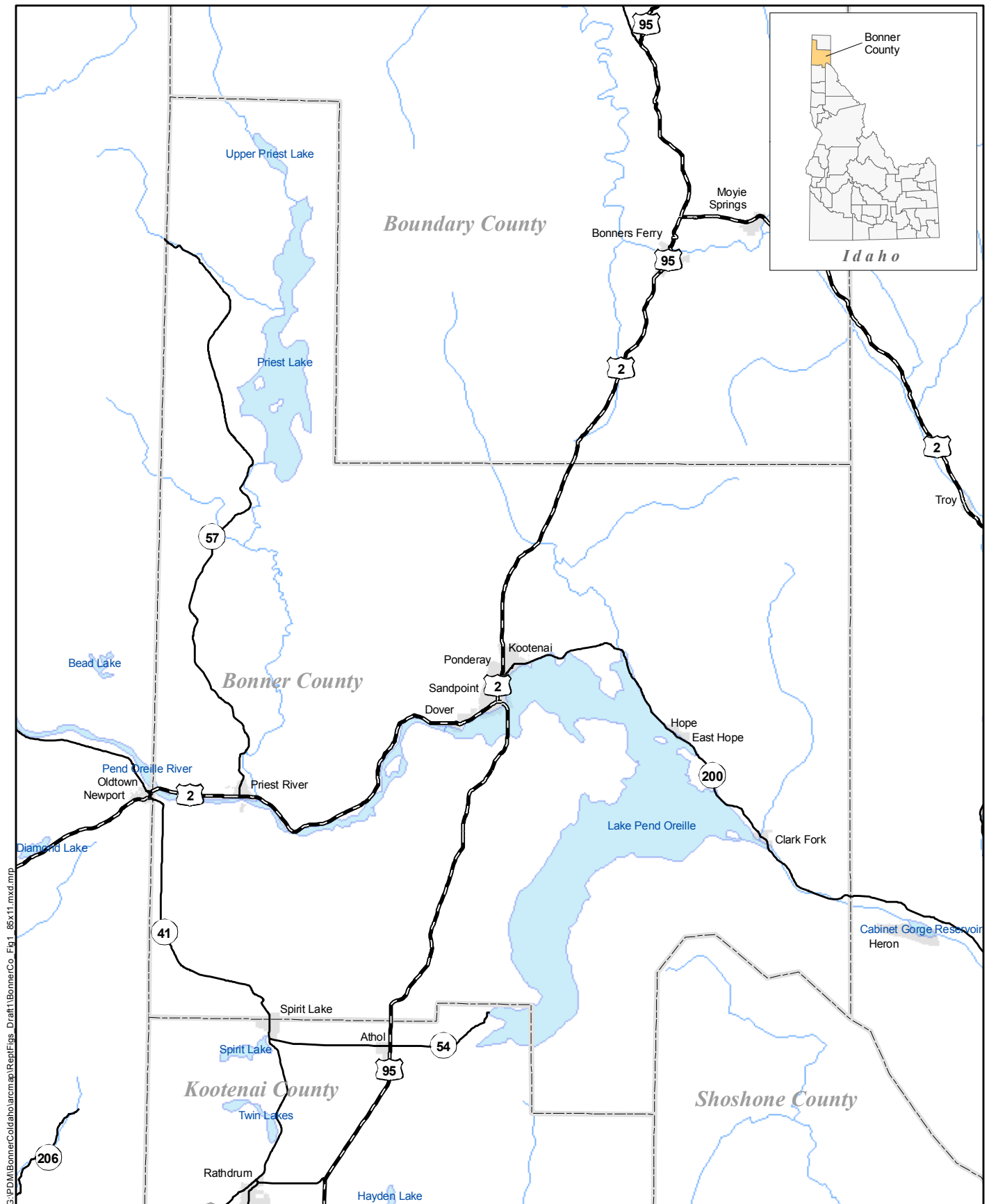
Bonner County is located in the Panhandle of Northern Idaho and is bounded by the States of Montana and Washington, with Boundary County to the north and Kootenai County to the south. The county covers approximately 1.1 million acres, most of which is forested. Public lands occupy 60 percent of the land base in Bonner County. Dominant geographic features include



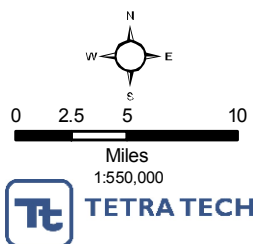
the Selkirk and Cabinet Mountain Ranges, Priest Lake and Lake Pend Oreille. The Selkirk Mountain Range separates the Priest Lake Basin on the west side of the county from the Purcell Trench. The Purcell Trench lies between the Selkirks and Cabinets and is dominated by Lake Pend Oreille which is 46 miles long and reaches depths of 1,100 feet. The Cabinet Mountain Range lies along the eastern boundary of Bonner County at the Montana state line. Selle Lowland, which

is an extension of the Purcell Trench north of Sandpoint is the most prominent valley in the county. Other valleys include the Clark Fork Valley in the northwestern part of the county and the Blanchard, Hoodoo, and Cocolalla Valleys in the southern part (SCS, 1982). The principal drainages in the area are the Clark Fork River and the Pend Oreille Rivers which flow east to west across the county. The Priest River drains the county north from Priest Lake. **Figure 1** presents a location map of Bonner County.

Bonner County has abundant water resources. The Clark Fork-Pend Oreille River basin, the major river basin in Bonner County, drains most of western Montana and carries approximately 15.8 million acre-feet per year at Cabinet, its point of entry into Bonner County. The Clark Fork River flows into Lake Pend Oreille. When it leaves Idaho as the Pend Oreille River below Albeni Falls Dam mean annual flow increases to 18.5 million acre-feet. The Priest River system, which drains the Selkirk Mountains, flows into and out of Priest Lake and joins the Pend Oreille River at the City of Priest River. Pack River originates in the forested Selkirk Mountains and flows southeasterly into Lake Pend Oreille approximately 10 miles east of Sandpoint. Pack River drains approximately 300 square miles, more than one-half mile from streams draining westerly from the western slopes of the Cabinet Mountains.



February, 2009



- State Highway
- U.S. Highway
- County Boundary
- Lake / Pond
- ~ River / Stream
- Municipality

**Figure 1**  
**Bonner County, Idaho**  
**Location Map**  
**Bonner County**  
**All Hazard Mitigation Plan**

Elevations in the county range from about 2,000 to 7,200 feet above sea level. The lowest elevation is the level of the Pend Oreille River at the Washington-Idaho state line at 2,030 feet. The City of Sandpoint, which is located on a delta at the northern end of Lake Pend Oreille is slightly higher in elevation at about 2,100 feet. The highest elevations are in the northern part of the county where mountain peaks of the Selkirk and Cabinet mountain ranges reach heights greater than 7,000 feet (SCS, 1982).

Sandpoint is the county seat of Bonner County. Incorporated towns include Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint.

#### 1.4 CLIMATE AND WEATHER

The climate in Bonner County is generally sub-humid characterized by warm, dry summers and cold, wet winters. Areas in the mountains have cooler summers and colder winters than areas in the valley. Annual precipitation in Bonner County ranges from 20 to 60 inches. The highest amount of precipitation is received in the mountains in the northwest part of the county. The southern part of the county receives the least amount of precipitation while Sandpoint's average annual precipitation is 33 inches. The driest months for Bonner County are normally July, August, and September and correspond to the height of the wildland fire season for Northern Idaho. Some rainfall normally occurs during these months, but extended dry periods can occur. Precipitation occurs year round in the mountains with deep snowpack accumulating during winter months. Chinook winds, which blow downslope and are warm and dry, often melt and evaporate snow. Precipitation during the summer months in the valleys occurs as rain showers with some thunderstorms (SCS, 1982)

Summers in the county are warm to hot in the valleys with much cooler temperatures in the mountains. In the winter the average temperature is 20 degrees F and the average daily minimum temperature is 23 degrees F. Average temperatures in the summer are 63 degrees and the average daily maximum temperature is 78 degrees (SCS, 1982).

**Table 1-1** shows the monthly average temperatures and precipitation for Sandpoint as well as the record high and low temperatures for each month.

TABLE 1-1 TOP WEATHER EVENTS IN SANDPOINT, BONNER COUNTY						
Month	Average High	Average Low	Mean	Average Precipitation	Record High	Record Low
January	32°F	19°F	26°F	3.94 in.	54°F (1919)	-31°F (1950)
February	38°F	23°F	30°F	3.47 in.	61°F (1995)	-10°F (1955)
March	46°F	28°F	37°F	2.85 in.	71°F (1915)	-35°F (1933)
April	56°F	34°F	45°F	2.25 in.	87°F (1977)	9°F (1936)
May	65°F	41°F	53°F	2.75 in.	97°F (1936)	22°F (1972)
June	72°F	47°F	59°F	2.46 in.	96°F (1992)	28°F (1919)

<b>TABLE 1-1</b>						
<b>TOP WEATHER EVENTS IN SANDPOINT, BONNER COUNTY</b>						
July	80°F	50°F	65°F	1.63 in.	104°F (1994)	33°F (1971)
August	80°F	49°F	64°F	1.43 in.	100°F (1961)	28°F (1924)
September	70°F	41°F	56°F	1.60 in.	96°F (1938)	16°F (1926)
October	56°F	33°F	45°F	2.30 in.	82°F (1923)	4°F (1935)
November	40°F	28°F	34°F	4.75 in.	66°F (1975)	-10°F (1921)
December	32°F	21°F	27°F	4.75 in.	58°F (1917)	-37°F (1968)

Source: Data from weather.com in Bonner Co. Wildland/Urban Interface Fire Mitigation Plan (2004)

## 1.5 ECONOMY

For more than a century, Bonner County's economy depended almost entirely on logging and lumber mills. Over the past 20 years, the local economic base has shifted to a mixture of tourism, manufacturing, retail, and services.

Bonner County's recreational opportunities and quality of life attracted thousands of new residents since the mid-1980s. Population growth spurred growth in the construction industry, retail stores, health care providers, public schools, service organizations, and government agencies. The construction, finance, insurance, and real estate industries in Bonner County are nearly three times larger than they would be in most counties of its size due to the county's exceptionally strong population growth, the large number of vacation homes built, and the high level of commercial and industrial development over the last decade.

Tourism also grew rapidly in the late 1980s and early 1990s. Summer tourism grew, as North Idaho became better known as a tourist destination. Sandpoint's reputation as a haven for the arts also contributed to the growth of tourism. The 1990 expansion of Schweitzer Mountain Resort boosted winter recreation.

The relocation of more than a dozen manufacturers to the county since 2000 has led to growth of the manufacturing sector. Between 2001 and 2004, Bonner County gained 500 jobs, experiencing growth of 36% in manufacturing jobs. The county's largest manufacturers that do not produce lumber or other wood products include: Litehouse (salad dressing and sauces); Unicep Packaging (one-dose plastic applicators); Encoder Products (electronics); Cygnus, (custom metal products); Thorne Research Products (nutritional supplements); and Diedrich Roasters (coffee-roasting equipment).

Although hundreds of jobs have been created in Bonner County, its unemployment rate continually hovered above 8 percent from 1990 to 2003. The highly seasonal employment pattern and the loss of high-paying lumber jobs caused some of the unemployment. Despite strong job growth, many Bonner County residents struggle with low incomes. In 2002, Bonner County's per capita income was \$21,865, while the State of Idaho's per capita income was \$25,476 and U.S. per capita income was \$30,906. The gap between Bonner County and U.S.

incomes has persisted for two decades. About 15 percent of Bonner County's population lives below the poverty level, while 13 percent of the U.S. population does. The county's lower income levels are largely the result of relatively high unemployment and low wages.

<http://www.sandpoint.com/Community/economy.asp>

## 1.6 SCOPE AND PLAN ORGANIZATION

The scope of the Bonner County AHM Plan includes the following:

- Identify and prioritize disaster events that are most probable and destructive,
- Identify critical facilities,
- Identify areas within the community that are most vulnerable,
- Develop goals for reducing the effects of a disaster event,
- Develop specific projects to be implemented for each goal,
- Develop procedures for monitoring progress and updating the Plan, and
- Officially adopt the Plan.

The Plan is organized into sections that describe the Planning Process (Section 2), Risk Assessment-Hazard Profile (Section 3), Risk Assessment-Vulnerability Assessment (Section 4), Mitigation Strategies (Section 5), and Plan Maintenance (Section 6). Appendices containing supporting information are included at the end of the Plan.

## 2.0 PLANNING PROCESS

The Bonner County All-Hazard Mitigation Plan is the result of a collaborative effort between Bonner County, the incorporated cities of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint, utilities, local agencies and regional, state, and federal organizations. Public participation played a key role in development of goals and mitigation projects. The planning process provided an opportunity for neighboring communities to participate.

### 2.1 CONTRIBUTORS AND PROJECT KICK-OFF

A kick-off meeting was held on April 28, 2008 in Sandpoint between Bonner County and its contractor Tetra Tech. The project proposal was reviewed and an outline for completing the project was discussed. Initially the project was to be completed by December 31, 2008. However, in the interest of a more extensive planning process and to allow for ample time for review of the draft plan, Bonner County requested that the project timeline be extended to at least a one year preparation period.

A press release announcing kick-off of the planning process was submitted to local newspapers at initiation of the project. The project kick-off letter was also sent via e-mail to entities on the project stakeholder list (see *Section 2.2*, below) and posted on the project website (see *Section 2.5*, below).

To fulfill the cost-share match obligation required for the FEMA grant which funded preparation of the AHM Plan, Bonner County hired Mr. Bob Hatfield, chairman of the local wildfire mitigation group BONFIRE to assist Tetra Tech with local coordination. Mr. Hatfield was responsible for identifying and providing information on the location and replacement value of critical facilities in Bonner County. He also worked with local jurisdictions to collect information on local plans and ordinances (**Appendix B**).

### 2.2 PROJECT PARTICIPANTS

The planning process was initiated by preparing a stakeholders list of individuals whose input was needed to help develop the AHM Plan. **Appendix C** presents the Bonner County stakeholders list.

On the County level, project stakeholders included: elected officials (Bonner County Commissioners), the Department of Emergency Management, Planning Department, Public Works Department, Bonner County Sheriffs Department, Bonner General Hospital, 911 Dispatch, Panhandle Health District, Lake Pend Oreille School #84, and West Bonner County School District #83.

Stakeholders from the incorporated towns of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River and Sandpoint included: mayors, clerks, floodplain administrators, sewer districts, and fire districts.

Stakeholders from state and federal agencies included: the National Weather Service (NWS), the U.S. Forest Service, U.S. Bureau of Land Management (BLM), U.S. Department of Homeland Security, U.S. Army Corps of Engineers, Idaho Department of Transportation, Idaho Department of Lands, and Idaho Fish and Game.

Utilities invited to participate in the planning process included: Avista Utilities, Wired or Wireless, TransCanada, Verizon, Inland Power Company, Northern Lights, Inland Power and Light, and Lakeview Telephone Exchange.

Non-governmental stakeholders including non-profits and other businesses in the community included: the Blanchard Area Senior Group (BASIC), Stoneridge Resort, American Red Cross, Bonner County Economic Development Corp., Priest River Development Corp., Ponderay Community Development Corp., North Idaho College, Montana Rail Link, Burlington Northern Railroad, Union Pacific Railroad, Port of Pend Oreille Valley Railroad, Coldwater Creek, Lighthouse, Home Depot, Walmart, Stimson Lumber, and Idaho Forest Group.

Planning partners from adjoining counties included: Boundary County Department of Emergency Management (DEM); Shoshone County Fire Mitigation Program; Pend Oreille County, Washington DEM; Spokane County, Washington Office of Emergency Management (OEM); Flathead County, Montana OEM; and, Sanders County, Montana OEM.

Planning partners on the stakeholders list received a variety of information during the planning process, including an invitation to complete the project survey (see *Section 2.6*, below), meeting notices, documents for review, and mitigation strategy documents.

## 2.3 REVIEW OF EXISTING PLANS AND STUDIES

At the initiation of the project, Bonner County and each local jurisdiction identified what planning mechanisms were available for incorporation and implementation of the AHM Plan. These planning documents are summarized in the *Plan Review Worksheets* contained in **Appendix B**. A number of the relevant planning documents, studies, reports and land use regulations were reviewed for this project are listed below:

- Bonner County Comprehensive Plan (2002)
- Bonner County Emergency Operations Plan ( 2004)
- Bonner County Department of Emergency Services, Five Year Plan
- Bonner County Flood Prevention Ordinance (Subchapter 7.5, Chapter 7, Title 12, Bonner County Revised Code) 2008

- Bonner County Wildland/Urban Interface Fire Mitigation Plan (2004, updated 2007)
- Emergency Action Plan for the Cabinet Gorge Hydroelectric Development, Avista Corp. (2005)
- Emergency Action Plan for Noxon Rapids Hydroelectric Development, Washington Water Power Company (1988)
- Panhandle Health District, Public Health Preparedness and Response Plan (2007)
- City of Sandpoint Comprehensive Plan (2009)
- City of Priest River Urban Renewal Plan (2007)
- City of Kootenai, Idaho Stormwater Masterplan Report and Recommendations (2005)
- Boundary County Idaho, All-Hazard Mitigation Plan (2007)
- Sanders County Montana Pre-Disaster Mitigation Plan
- State of Idaho Hazard Mitigation Plan (2007)

During plan development, Tetra Tech spoke with experts from federal, state, and local agencies, searched the internet and newspapers, and interviewed long-time residents for information of hazard affecting the region.

## 2.4 STEERING COMMITTEE

The Bonner County DEM director appointed a steering committee to assist with development of the AHM Plan. These individuals included:

- Bob Howard, Bonner County DEM
- Eric Christoferson, Bonner County Planning and Zoning Department
- Bob Hatfield, West Pend Oreille Fire Department, BONFIRE chairman, and resident of Priest River
- Carol Kunzeman, City of Ponderay Mayor
- Ryan Luttmann, Bonner County Road and Bridge Department

Steering committee responsibilities included attending public meetings to discuss Plan development and progress made to date, providing input and feedback on major milestones of the Plan, assisting in the collection of local data, supporting the Plan throughout the adoption process, updating the Plan in the future.

Conference calls were held with the steering committee while the Plan was being drafted. **Table 2-1** indicates the topics discussed and duration of each meeting. In addition to the steering committee, County Commissioners and Mayors were invited to attend the conference calls. In advance of each meeting, an agenda and/or materials to be discussed (i.e. example mitigation strategies, examples of project eligible for FEMA funding, etc.) were sent to meeting participants. At the conclusion of each meeting, minutes were drafted and sent to participants, Commissioners, and Mayors. Conference call minutes are presented in **Appendix C**.

<b>TABLE 2-1 AHM PLAN STEERING COMMITTEE CONFERENCE CALLS</b>		
<b>Date</b>	<b>Subject</b>	<b>Duration</b>
July 9, 2008	Critical facility inventory, public meetings, hazard profiles, on-line survey	90 minutes
July 25, 2008	Critical facility inventory, public meetings, on-line survey, hazard prioritization	75 minutes
August 14, 2008	Public meetings, hazard prioritization, example mitigation projects	75 minutes
September 3, 2008	Public meetings	45 minutes
October 10, 2008	Review mitigation strategies and apply project ranking criteria.	120 minutes
October 20, 2008	Review mitigation strategies and apply project ranking criteria.	135 minutes
November 10, 2008	Develop implementation steps and schedule for mitigation projects. Identify responsible agency/party and funding sources.	60 minutes
November 14, 2008	Develop implementation steps and schedule for mitigation projects. Identify responsible agency/party and funding sources.	75 minutes
November 24, 2008	Identify additional planning partners. Discuss future development and land use changes. Identify completed mitigation projects.	60 minutes
January 7, 2009	Ranking and implementation of flood and landslide mitigation projects.	30 minutes

The steering committee was expanded during the review process to include at least one representative from each jurisdiction adopting the AHM plan. These individuals are listed in **Table 2-2**.

<b>TABLE 2-2 BONNER COUNTY AHM PLAN REVIEW PARTICIPANTS</b>		
<b>Jurisdiction</b>	<b>Individual</b>	<b>Organization</b>
Bonner County	Cornell Rasor Bob Howard	Bonner County Commissioner Bonner County Dept. Emergency Management
City of Clark Fork	Tom Shield Brian Cantrell Carol Bock	Clark Fork Mayor Clark Fork Councilman Volunteer Fire Dept. Administrator
City of Dover	Bryan Quayle Kym Holbert	Dover City Planner Dover City Clerk
City of East Hope	Christy Franck	East Hope Clerk & Floodplain Administrator
City of Hope	Shirley Ramey	Hope City Clerk
City of Kootenai	Bryan Quayle Charlie Gay	Kootenai City Planner Kootenai City Engineer
City of Oldtown	Sheila Gormley	Oldtown City Clerk
City of Ponderay	Mike Fitzgerald	Ponderay City Council
City of Priest River	Jack Johnson John Wilson Jeff Connolly	Priest River City Council Priest River City Council Priest River City Council
City of Sandpoint	Robert Tyler	Sandpoint Fire Chief

This group of reviewers assisting the steering committee in preparing a consolidated list of comments to the contractor on the draft Plan.

## 2.5 PROJECT WEBSITE

A website was setup at the start of the project to provide information to project stakeholders and the citizens of Bonner County on the AHM Plan. The project website was hosted on the Bonner County municipal website and can be viewed at: <http://206.127.65.86/bonnercopdm/index.htm>. The website remained active during the course of the project through adoption of the Plan by the local jurisdictions.

The website contained a home page and pages for project contacts, forms, meetings, plan document, reference materials, stakeholders, and Hazard Profile Survey. The Home page contained a letter from the director of the Bonner County DEM inviting participation in development of the AHM Plan. The Contacts page contained information on Bonner County DEM and Tetra Tech personnel involved in management of the project. The Forms page contained a cost-share tracking form and plan review comment form. The Meetings page contained the public meeting schedule, notes from the public meetings, the public meeting posters, and notes from the steering committee conference calls. The Plan page contained sections from the draft plan for stakeholder review. The Reference Material page contained the FEMA website, Idaho Department of Homeland Security website, Guidance on Multi-Hazard Mitigation Plans, and the State of Idaho's Hazard Mitigation Plan. The Stakeholders page contained contact information for the AHM Plan steering committee and a list of the project stakeholders. The Survey page contained the Hazard Profile Survey described below.

## 2.6 HAZARD PROFILE SURVEY

A Hazard Profile Survey was developed at the beginning of the planning effort to solicit input from Bonner County residents on the hazards that should be included in the AHM Plan. The survey was provided in electronic format and posted on the project website. A press release was sent to local newspapers announcing the survey launch and an e-mail notice was distributed to the project stakeholders list which included elected officials, local government personnel, utilities, and business owners.

The survey was available in hardcopy from the Bonner County DEM for residents without internet access. Hardcopies of the survey were also available at the Bonner County fair where the Department of Emergency Management had a public information booth. A notice encouraging completion of the Hazard Profile Survey was posted at local libraries where computers are available for public use. In total, 69 individuals completed the survey including respondents from Bonner County and all incorporated cities in Bonner County, several entities from adjoining counties (Shoshone, Boundary), nearby cities (Spokane, Bonners Ferry), and several state agencies.

The survey included sections on the occurrence and frequency of hazard events in the county; the magnitude of the various hazards; and, how the hazards have impacted the public, property, environment and economy of Bonner County. The final section of the survey requested input on what should be done to mitigate the effects of hazards in area communities. A copy of the Hazard Profile Survey with compiled results is presented in **Appendix C** and is summarized below.

- 37 percent of the survey participants represented Bonner County; 13 percent represented one of the incorporated cities; and 27 percent were from the general public.
- A high risk rating was given to winter storms and extended cold, wildfire, and hazardous material incidents. A medium risk rating was given to severe wind and tornado events, thunderstorms and lightning, and landslides. A low risk rating was given to terrorism/civil unrest/violence, earthquake, and volcanic eruption.
- Regarding frequency of hazard events where “common” was once per year or more; “frequent” was more than once per decade but not every year; and “infrequent” was once per decade or less, the following results were tabulated: Common – utility outage, thunderstorms and lightning, and winter storms/extended cold; Frequent – railroad accidents, and wildfire; and, Infrequent – dam failure, and earthquake.
- When asked what hazards concerned them and why, the survey respondents stated that wildfire and winter storms were their greatest concern because of the high probability of serious damage.
- Regarding how the various hazards had impacted the public, natural and built environment, and economy of Bonner County, the following responses were collected: Fatalities and injuries have resulted most from ground transportation accidents, avalanche, and aviation accidents; property damage from wildfire, severe wind and tornados, and flooding; environmental damage from wildfire, flooding, and hazardous material incidents; and economic loss from utility outage, wildfire, and winter storms/extended cold.
- The most catastrophic hazard event in Bonner County was reported as: wildfires in 1910, 1991, 1994; the ice storm of 1996; avalanches at Schweitzer Mountain and at the Green Monarch Mine in 1910; the windstorm of 1906; the Sandpoint tornado in 1907; landslides at Lakeview in 1996 and Cape Horn in 1999; winter storms in 1924, 1996/97 and 2007/08; flood events in 1996/97 and in 2008 in the East Hope/Hope/Clark Fork areas; and, the Mount St. Helen’s volcanic eruption in 1980.

- Responses to the question regarding what should be done in communities to mitigate the affects of hazards ranged from education, being properly prepared, stricter regulations, to a number of mitigation projects (see **Appendix C**).

## 2.7 PUBLIC MEETINGS

A total of 56 people attended one or more of five public meetings conducted in Bonner County during the drafting stage of the Plan including participants from towns outside of the planning area (Hayden, ID and Elk, WA). Meeting information is presented in **Table 2-3**.

TABLE 2-3 BONNER COUNTY PUBLIC MEETINGS			
Date	Location	Venue	Attendance
September 8, 2008	Priest Lake	Priest Lake Elementary School Library	12
September 9, 2008	Sandpoint	Sandpoint Community Center	10
September 10, 2008	Blanchard	Blanchard Community Center	17
September 10, 2008	Priest River	Priest River High School Library	6
September 11, 2008	Hope	Memorial Community Center	11

The purpose of the meetings was to present information on historic disasters, review maps showing critical facilities, and gather ideas from citizens about mitigation planning and priorities for mitigation goals. The sign-in sheets from the Bonner County public meetings and meeting summaries are presented in **Appendix C**.

In advance of the public meetings, press releases were distributed to local and regional newspapers including the Sandpoint Daily Bee, the Priest River Times, the Newport Miner, the Clark Fork River Journal and the Blanchard BASIC newsletter. A paid advertisement was published in the Sandpoint Daily Bee on Saturday, September 6, 2008 listing the five public meetings. Notices of the public meetings were sent in advance to all jurisdictions participating in the planning process including Bonner County, Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, and Priest River, and Sandpoint. Emergency managers from neighboring counties were notified of the meetings via e-mail as were all federal, state, and local agencies and businesses on the project stakeholders list (**Appendix C**). A copy of the press release and copies of the articles as they appeared in several local newspapers are included in **Appendix C**.



## 2.8 PROJECT WORKSHOP

A project workshop was conducted with the Bonner County LEPC to review hazard areas and to provide input on the mitigation actions developed. The workshop was held on January 8, 2009 via a webcast with a PowerPoint presentation and handouts. Fifteen people attended the webcast including representatives from Bonner County (Emergency Management, Road and Bridge, and Sheriff's departments) and citizens from incorporated cities in the planning area (Sandpoint), utilities (Verizon, and Wired or Wireless from Spokane, WA), several fire departments (Sagle, West Pend Oreille, and Northside), state and local agencies (Idaho Fish and Game, and Panhandle Health District from Kootenai County, ID), and a local business (Schweitzer Mountain).

## 2.9 PLAN REVIEW

The public was provided at least two opportunities for comment on the Bonner County AHM Plan. The first opportunity was during the drafting process. An advertisement was run in the local newspaper notifying the public of the availability of the draft AHM Plan and that review copies were available in hard copy, electronically on compact disk (CD) upon request, or accessible via the project website. Hard copies of the Plan were available for review at local administration buildings and/or at the public libraries serving Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River and Sandpoint. An e-mail announcement was sent to all entities on the project stakeholders list regarding availability of the draft AHM Plan for review. CDs of the draft Plan were provided to the County Commissioners, Mayors, and upon request to town council members, federal, state, and local agencies, businesses, members of the general public and emergency managers from adjoining jurisdictions. The project steering committee was expanded for review of the draft AHM Plan to include at least one individual from each jurisdiction adopting the plan (review group) as appointed by the County Commissioners and/or Mayors (see *Section 2.4*, above).

The draft document was produced with line numbers and double spaced to aid in the review process. Reviewers were asked to submit their comments on the draft AHM Plan to the Bonner County DEM director after a 30-day review period. The DEM director reviewed the comments and in consultation with the review group and project steering committee submitted a consolidated list of comments to the contractor. Comments were incorporated into a final draft document and the AHM Plan was submitted to Idaho State Hazard Mitigation Officer and FEMA for review and pre-approval.

Comments received from FEMA and the State Hazard Mitigation Officer were addressed and the final AHM Plan was produced. At this point a second opportunity was provided to the public to comment on the Plan. The final AHM Plan was posted on the project website and project stakeholders were notified of its availability via an e-mail message and press release in the local newspapers. The final AHM Plan was provided to the Bonner County Commissioners and

incorporated cities for adoption. The County Commission and City Council meetings at which the resolutions adopting the plan were passed were advertised and open to the public, also providing the public an opportunity to review the final version of the AHM Plan. After adoption, final copies of the Plan were submitted to Bonner County, the incorporated cities of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint, the Idaho State Hazard Mitigation Officer and FEMA.

Future comments on the Bonner County AHM Plan should be addressed to:

Bonner County Department of Emergency Management  
4100 McGhee Road  
Sandpoint, Idaho 83864  
(208) 265-8867

## 2.10 PLANNING SUMMARY

**Table 2-4** summarizes how all jurisdictions were involved in development and review of the Bonner County AHM Plan.

TABLE 2-4 PARTICIPATION IN THE PLANNING PROCESS										
Activity	Bonner County	City of Clark Fork	City of Dover	City of East Hope	City of Hope	City of Kootenai	City of Oldtown	City of Ponderay	City of Priest River	City of Sandpoint
Hazard Profile Survey	X	X	X		X	X	X	X	X	X
Local Plan/Ordinance Input	X	X	X	X	X	X	X	X	X	X
Critical Facility Input	X	X	X	X	X	X	X	X	X	X
Public Meetings	X	X	X	X	X			X	X	X
LEPC Workshop	X							X	X	X
Steering Committee	X							X	X	
Review Group	X	X	X	X	X	X	X	X	X	X

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### 3.0 RISK ASSESSMENT – HAZARD PROFILES

The hazard risk assessment requires information about what hazards have historically impacted the community and what hazards may present risks in the future. Identifying historical and possible future hazards was primarily accomplished in two phases. The first phase entailed interviewing local government officials and staff, LEPC members, and conducting a survey of the general public. *Section 2* describes the public outreach process in detail. The second phase entailed researching government records and news publications for records of previous hazard events. The results of the initial hazard evaluation were used to focus further risk assessment on hazards that historically had caused the most problems and those judged to be of most future concern.

#### 3.1 HAZARD IDENTIFICATION

Bonner County may be affected by many types of natural, human-caused hazards, and biological hazards. Hazards for this plan were identified through several different means. A wide range of hazards was presented to the project steering committee who narrowed down the list to relevant hazards affecting Bonner County. These hazards were included in the Hazard Profile Survey where input from the public was used to further narrow the list. The wide-range of hazards evaluated for this project is presented in **Table 3-1**.

TABLE 3-1 HAZARDS EVALUATED DURING AHM PLAN DEVELOPMENT		
Natural Hazards	Human Caused Hazards	Hydrologic Hazards
Thunderstorms & Lightning	Bomb Threats	Riverine Flooding
Tornados	Terrorism	Lake Flooding
Windstorms	Cyber-terrorism	Flash Flooding
Hailstorms	Civil Disturbance	Technological Hazards
Winter Storms and Extended Cold	Aviation Accident	Dam Failure
Extreme Heat and Cold	Ground Transportation Accident	Power Failure
Wildfire	Railway Accident	Energy Shortage
Drought	Hazardous Material Incidents	Nuclear Accidents
Avalanche	Geologic Hazards	Nuclear Attacks
Biological Hazards	Landslides	Fixed Site (drug labs, pipelines, refineries, underground storage tanks)
Communicable Disease	Land Subsidence	Transportation (railway, roadway, waterway, airway)
Livestock Disease	Earthquakes	
Agriculture Disease	Volcanic Eruption	

Past hazard events and declared disasters were researched to further focus the hazards with the greatest potential to occur in Bonner County. An exhaustive search was conducted for hazard data on Bonner County. Hazard information was compiled by examining data from FEMA, Spatial Hazard Events and Losses Database for the United States (SHELDUS), the National Response Center, National Climatic Data Center (NCDC), the Idaho Department of Homeland Security, reviewing historical newspaper articles, and interviewing local experts. **Table 3-2** lists the state and federal declared disasters that have occurred in Bonner County.

**TABLE 3-2  
DECLARED DISASTERS IN BONNER COUNTY**

Date of Declaration	Event	Area Affected	State Disaster Declaration	Federal Disaster Declaration
May 1980	Volcanic Eruption	Bonner County	Yes	Yes
February 1982	Flood	Bonner County	Yes	No
July 1985	Wildland Fire	State	Yes	No
August 1985	Wildland Fire	State	Yes	No
August 1986	Wildland Fire	State	Yes	No
January 1989	Winter Storm	Bonner County	Yes	No
July 1989	Wildland Fire	State	Yes	No
April 1991	Flood	Bonner County	Yes	No
May 1991	Flash Flood	Bonner County	Yes	No
April 1992	Wildland Fire	State	Yes	No
September 1992	Wildland Fire	State	Yes	No
December 1994	Flood	North Idaho	Yes	No
February 1996	Winter Storm and Flood	Bonner County	Yes	Yes
November-January 1996/1997	Winter Storm, Flood, Landslide	Bonner County	Yes	Yes
March-June 1997	Flood and Landslide	Bonner County	Yes	Yes
July 2000	Wildland Fire	Bonner County	Yes	Yes
September 2005	Flood	State	No	Yes
January 2008	Winter Storm	Bonner County	Yes	No
Spring 2008	Flood	Bonner County	Yes	No

Source: State of Idaho Hazard Mitigation Plan, 2007; Bonner County DEM

### 3.2 HAZARD PROFILES

Based on the outreach activities described in *Section 2*, the project steering committee determined that certain hazards should be profiled in the AHM Plan. The hazards selected are those that have impacted Bonner County residents, property, and economy in the past with likelihood to impact the area in the future. Following is a list of the hazards profiled in the Plan in alphabetical order:

- Avalanche
- Aviation Accidents
- Communicable Disease
- Dam Failure
- Drought
- Earthquake
- Flooding
- Ground Transportation Accidents
- Hazardous Material Incidents
- Landslides
- Railroad Accidents
- Severe Thunderstorms Wind and Hail
- Terrorism, Civil Unrest and Violence

- Tornados
- Utility Outage
- Volcanic Eruption
- Wildfire
- Winter Storms

Each hazard profile contains a description of the hazard, the location and extent of previous events, and the probability of future events. Where applicable, a list of past hazard mitigation projects is presented.

Probability of a hazard event occurring in the future was assessed based on hazard frequency as categorized by the number of times the hazard was likely to occur over a ten year period. Probability was broken down as follows:

- Common – greater than 1 event per year (frequency greater than 1).
- Frequent – less than 1 event per year but greater than 1 event every 10 years (frequency greater than 0.1 but less than 1).
- Infrequent – less than 1 event every 10 years (frequency less than 0.1).

## Avalanche

### *Hazard Description*

An avalanche is a mass of snow (and possibly other debris) in motion down a slope. Avalanches can only occur where snow can collect on steep slopes – in Idaho, they are found in the mountainous portions of the State. Avalanches occur rapidly, can be difficult to predict with certainty, and are sometimes initiated by their victims.

The complex interaction of weather and terrain factors contributes to the location, size, and timing of avalanches. Avalanche danger increases with major snowstorms and periods of thaw. Most avalanches occur during or just after large snowstorms. About 90 percent of all avalanches start on slopes of 30-45 degrees. Avalanches release most often on slopes above timberline that face away from prevailing winds. Avalanches can run on small slopes well below timberline, such as gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to slopes and prevent avalanches from starting; however, avalanches can release and travel through a moderately dense forest (Colorado Avalanche Information Center in Bonner County Planning Department, 2002a).

Of the major avalanche hazards, the interruption of communications lines probably occurs most frequently. Places of highest hazard include ski areas, mountain passes, and other areas where transmission lines cross avalanche paths. Property damage associated with avalanches also affects transportation facilities such as highways, railroads, and bridges. Road closures are not uncommon and vehicles are lost on occasion. The economic costs of these disruptions can be significant, especially in areas with limited access options. Forest resources, such as timber and wildlife habitat, may also be impacted by significant slides (IBHS, 2007).

### *Extent and Location of Previous Hazard Events*

Avalanches occur throughout the mountains of Idaho. Avalanche hazards most-directly threaten winter recreationists, homes and businesses in mountainous regions, and communication and transportation networks. For the period 1950 through 2007, 58 avalanche-related fatalities have been reported in Idaho (Colorado Avalanche Information Center, 2009). Snowmobiling is currently the leading cause of avalanche fatalities in Idaho. In Bonner County, most avalanches occur in the back county, outside of developed ski areas. **Table 3-3** lists the avalanches in Bonner County reported in the SHELDUS database. Reports from the local newspaper are presented below. There have not been repetitive losses in Bonner County associated with the Avalanche hazard.

TABLE 3-3 AVALANCHES IN BONNER COUNTY				
Date	Location	Magnitude	Property Damage	Source
February 22, 2003	Bonner County	-	-	SHELDUS

**February 2, 2008** - Continued heavy snowfall in Bonner County caused a disaster emergency in Bonner, Kootenai, Latah and Boundary counties. Sustained snowfall prompted the Idaho Panhandle Avalanche Center to issue an avalanche advisory for its entire forecast region from the St. Joe Mountains to the Selkirk and Cabinet mountains. Conditions were rated extreme on all southeast, northeast and north aspects steeper than 30 degrees and above 5,000 feet, with natural and human triggered avalanches considered a certainty (*Residents Work to Keep on Top of Snow*, Bonner County Bee).

**December 23, 2008** - Schweitzer Mountain Resort reported six inches of new snow in a 24-hour period, bringing the season total up to 76 inches. The mountain should get even more snow in the coming days, as forecasts call for continued cold weather with eight to 12 inches of snow in the valleys and as much as 12 to 15 inches in the mountains. Avalanche conditions for the entire Idaho Panhandle National Forest advisory area are rated as considerable on wind-loaded aspects greater than 30 degrees and above 5,000 feet, according to the Idaho Panhandle Avalanche Center. The center is warning that natural avalanches in those areas are possible and human-triggered avalanches are probable. Conditions are rated moderate on all other slopes below 5,000 feet (*More Snow Forecast for Region*, Bonner County Daily Bee).

### ***Probability of Future Events***

The Colorado Avalanche Information Center has compiled statistics on a statewide basis on avalanche fatalities. Idaho ranks fifth in the nation with over 58 fatalities from 1950 through 2007. The top three activities being undertaken at the time of an avalanche were climbing, backcountry skiing, and snowmobiling.

The probability of a future avalanche event in Bonner County causing enough damage for a county, state, or federal disaster declaration rated "infrequent".

## Aviation Accident

### *Hazard Description*

Aviation accidents can occur for a multitude of reasons from mechanical failure to poor weather conditions to pilot error. Several airports, landing fields, and heliports are located in Bonner County. The Transportation Component of the Bonner County Comprehensive Plan (Bonner County Planning Department, 2002) describes these facilities, as follows.

The Sandpoint Airport, located on approximately 60 acres in northwest Sandpoint was established in the 1940's. The asphalt runway is 5,500 feet long and 75-feet wide. The airport registers about 18,000 operations (take-offs and landings) annually. About 40 percent of the air traffic is business-related. Another 40 percent use the Sandpoint facility for tourism-related activities, while the remaining 20 percent is attributed to recreational flying or training. State statistics reflect 73 percent of the Sandpoint air traffic is attributed to general transient aviation, 24 percent to local general aviation and the remaining 3 percent to air taxi service.

The Priest River Municipal Airport, located east of State Highway 57 and north of the City of Priest River, was established in 1921. The airport's asphalt runway is 2,950-feet long and about 48-feet wide. State figures show that airport traffic is 81 percent transient and 19 percent local/general aviation.

The Priest Lake Airport is located about three miles south of Nordman, on the west side of Priest Lake, west of State Highway 57. The airstrip is public and operated by the U.S. Forest Service. The 4,000-foot long by 175-foot wide grass landing strip is open on a seasonal basis. The landing strip receives about 23 operations per week and is 100 percent transient general aviation.

The Cavanaugh Bay Airport is located about three miles north of the Coolin townsite on the east side of Priest Lake. The airport is open to the public, but unattended. There is no winter maintenance. The grass runway is 3,100-feet long by 120-feet wide. The airport averages 86 landings and take-offs per week and is 100 percent transient general aviation.

There are numerous landing fields and several smaller public airstrips in Bonner County to serve the outlying areas.

Three private heliports are located in the county; Bonner General Hospital in Sandpoint, Bird #1 heliport at Glengarry Bay on Lake Pend Oreille; and Holiday Shores, west of Hope on Lake Pend Oreille. A U.S. Forest Service-operated helipad is located three miles south of Nordman at the Priest Lake Airport.

### Extent and Location of Previous Hazard Events

The National Transportation Safety Board (NTSB) has maintained a database of aircraft accidents since 1962. Database listings for Bonner County are presented in **Table 3-4**. Following the table is a description of an aviation accident reported in the local newspaper. The data indicates four fatalities have occurred in Bonner County due to aircraft accidents in the past 45 years. However, there have not been repetitive losses to Bonner County infrastructure associated with the Aircraft Accident hazard.

**TABLE 3-4  
AIRCRAFT ACCIDENTS IN BONNER COUNTY**

Date	Airport	Aircraft Make	Fatalities	Probable Cause
9/18/1965	Priest River	LUSCOMBE 8A	Nonfatal	Improper operation of brakes and/or flight controls.
9/27/1967	Priest River	HILLER UH-12E	Nonfatal	Tail rotor struck tree during in-flight hovering. Sunglare.
1/20/1968	Sandpoint	CESSNA 120	Nonfatal	Pilot attempted operation beyond experience/ability level
11/4/1968	Sandpoint	LUSCOMBE 8A	Nonfatal	Pilot failed to maintain directional control due to unfavorable wind conditions.
8/31/1968	Sandpoint	PIPER PA-16	Nonfatal	Premature lift-off.
4/5/1970	Sandpoint	BEECH 35	Nonfatal	Pilot failed to assure gear was down and locked. Aborted due to damaged propeller.
6/27/1971	Priest Lake	TAYLORCRAFT BC12-D	Nonfatal	Engine malfunction. Collided with trees on final approach.
8/28/1972	Priest Lake	MOONEY M20-C	Nonfatal	Improper operation of aircraft.
1/23/1973	Sandpoint	CESSNA 120	Nonfatal	Aircraft burst into flames after contact with power lines.
12/2/1973	Priest River	CESSNA 150	Nonfatal	Engine failure. Collided with trees during initial climb. Water in fuel.
10/24/1975	Sandpoint	BELL 47G3B2	Nonfatal	Encountered variable and gusty winds. Served into snow bank on landing.
12/19/1975	Sandpoint	NA ROCKWELL 112	Nonfatal	Pilot failed to see and avoid objects or obstructions. Struck power lines while taking off from a meadow
3/30/1975	Sandpoint	CHAMPION 7GCBC	Nonfatal	Complete engine failure
6/21/1975	Priest River	ERCO 415-C	Nonfatal	Complete loss of power due to water in fuel.
11/22/1976	Sandpoint	PIPER PA-28R	Fatal (1)	Pilot in attempted operation beyond experience/ability level became lost/disoriented
1/12/1977	Sandpoint	CESSNA 421A	Nonfatal	Snow on runway. Aircraft brakes locked. Swerved into snow bank.
4/20/1977	Sandpoint	CESSNA 180	Nonfatal	Pilot failed to maintain directional control due to gusts to 15 knots.
12/9/1979	Sandpoint	CESSNA 305A	Nonfatal	Pilot misjudged clearance and struck power line 80 feet above river.
8/15/1979	Sandpoint	BEECH 95-B55	Nonfatal	Poorly planned approach due to lack of familiarity with aircraft. Unfavorable wind conditions.
1/31/1980	Sandpoint	PIPER PA-38	Nonfatal	Pilot failed to maintain directional control and veered into snow bank.
11/3/1981	Priest River	MAULE M-5	Nonfatal	Pilot lost directional control. Tire blew out on landing.
7/19/1981	Priest River	CESSNA 177	Nonfatal	Pilot hit soft spot on runway.
8/24/1986	Sandpoint	BELLANCA 7ECA	Nonfatal	Pilot lost directional control of aircraft for unknown reasons during landing.
8/31/1986	Priest River	AERO COMMANDER 100	Nonfatal	Pilot attempted to land in thunderstorm. Aircraft struck the ground hard, short of the runway due to strong downdraft.
9/6/1988	Priest River	MAULE M5-235C	Nonfatal	Hard landing due to gusty winds.

**TABLE 3-4  
AIRCRAFT ACCIDENTS IN BONNER COUNTY**

Date	Airport	Aircraft Make	Fatalities	Probable Cause
6/23/1990	Priest River	CESSNA 340A	Nonfatal	Pilot misjudged distance and altitude and failed to maintain adequate airspeed during landing approach.
10/14/1991	Sandpoint	MCHOLLAND XPA-11	Nonfatal	A poor in-flight decision. Contributing to the accident was the rough/uneven terrain.
5/24/1998	Sandpoint	CESSNA 150L	Nonfatal	Loss of consciousness by the pilot, resulting in loss of aircraft control and subsequent collision with terrain.
9/21/1998	Priest River	DUNCAN DX4	Nonfatal	Pilot failed to maintain adequate airspeed which resulted in stall.
9/4/1999	Sandpoint	CESSNA 182M	Nonfatal	Hard landing at Bird 2 Airstrip, Sandpoint
6/8/2003	Sandpoint	AVIAT A-1A	Fatal (1)	Pilot failed to maintain adequate airspeed during a low pass maneuver which resulted in a stall.
8/15/2004	Sandpoint	BEYERS KITFOX IV	Nonfatal	Aircraft departed the runway and impacted trees during landing
10/21/2005	Sandpoint	CESSNA 402B	Nonfatal	Equipment failure
12/3/2005	Sandpoint	DIAMOND INDUSTRIES HK 36	Nonfatal	Aircraft collided with a tractor during takeoff from a private airstrip near Sandpoint
3/16/2006	Sandpoint	CESSNA 182D	Nonfatal	Aircraft impacted a snow blowing unit while taxiing for takeoff

Source: National Transportation Safety Board, 2008

**August 6, 2005** - An airplane crash at the Cavanaugh Bay airstrip claimed two lives. A 1989 Lang Experimental Aircraft went down 200 yards south of the airstrip at 11:20 a.m. killing the pilot and one passenger. The plane appeared to be on an approach when it struck trees approximately 100 yards south of the Cavanaugh Bay Resort's grass runway and crashed. The wreckage immediately burst into flames. (*Priest Lake Airplane Crash Claims Two*, Bonner County Daily Bee)

### ***Probability of Future Events***

The probability of future aviation accidents occurring in Bonner County is rated as "common", likely occurring more than once per year. Aviation accidents in Bonner County involve private, small aircraft which do not involve mass casualties.

## Communicable Disease

### ***Hazard Description***

Communicable diseases, sometimes called infectious diseases, are illnesses caused by organisms such as bacteria, viruses, fungi and parasites. Sometimes the illness is not due to the organism itself, but rather a toxin that the organism produces after it has been introduced into a human host. Communicable disease may be transmitted (spread) either by: one infected person to another, from an animal to a human, from an animal to an animal, or from some inanimate object (doorknobs, table tops, etc.) to an individual. A pandemic is a global disease outbreak.

Communicable disease could be devastating to the population or economy of Bonner County. Human diseases when on an epidemic scale, can lead to high infection rates in the population causing quarantines and mass fatalities. Health care providers, laboratories, and hospital administrators are required, according to the rules and regulations governing Idaho reportable diseases, to report confirmed or suspected communicable diseases and conditions to their local health district or state Office of Epidemiology within three (3) working days of identification or suspicion. The Panhandle Health District has a Public Health Response and Response Plan for communicable disease and pandemic outbreaks.

### ***Extent and Location of Previous Hazard Events***

There have not been repetitive losses in Bonner County associated with the Communicable Disease hazard. A brief description of several communicable diseases that have affected Bonner County in the past are presented below.

***Campylobacteriosis*** is an infectious disease caused by bacteria of the genus *campylobacter*. Most people who become ill with campylobacteriosis get diarrhea, cramping, abdominal pain, and fever within two to five days after exposure to the organism. In persons with compromised immune systems, campylobacter occasionally spreads to the bloodstream and causes a serious life-threatening infection. The vast majority of cases occur as isolated, sporadic events, not as part of recognized outbreaks. Active surveillance indicates that about 13 cases are diagnosed each year for each 100,000 persons. Most cases are associated with eating raw or undercooked poultry meat or from cross-contamination of other foods by these items. Infants may get the infection by contact with poultry packages in shopping carts. Outbreaks of campylobacter are usually associated with unpasteurized milk or contaminated water. [http://www.cdc.gov/nczved/dfbmd/disease\\_listing/campylobacter\\_gi.html](http://www.cdc.gov/nczved/dfbmd/disease_listing/campylobacter_gi.html)

***Cryptosporidium*** is a diarrheal disease caused by a microscopic parasite, *cryptosporidium*. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine disinfection. While this parasite can be

transmitted in several different ways, water is a common method of transmission and cryptosporidium is one of the most frequent causes of waterborne disease (drinking water and recreational water) among humans in the United States. Cryptosporidium can be spread by swallowing water that can be contaminated with sewage or feces from humans or animals, by accidentally swallowing something that has come in contact with the stool of a person or animal infected with cryptosporidium.

<http://healthandwelfare.idaho.gov/DesktopModules/Documents/DocumentsView.aspx?DocumentsView.aspx?tabID=0&ItemID=11248&Mid=12762&wversion=Staging>

**Giardiasis** is a diarrheal illness caused by a microscopic parasite, *giardia intestinalis*. Once a person or animal has been infected with giardia, the parasite lives in the intestine and is passed in feces. Because the parasite is protected by an outer shell, it can survive outside the body and in the environment for long periods of time (i.e., months). During the past two decades, giardia infection has become recognized as a common cause of waterborne disease in humans in the United States. Giardia is found on surfaces or in soil, food, or water that has been contaminated with the feces from infected humans or animals. Infection can occur accidentally swallowing the parasite; you cannot become infected through contact with blood. Giardia infection can cause a variety of intestinal signs or symptoms, which include diarrhea, stomach or abdominal cramps, upset stomach or nausea. These symptoms may lead to weight loss and dehydration.

[http://www.cdc.gov/ncidod/dpd/parasites/Giardiasis/factsht\\_giardia.htm](http://www.cdc.gov/ncidod/dpd/parasites/Giardiasis/factsht_giardia.htm)

**Influenza** is a serious disease caused by viruses that infect the respiratory tract. Pandemic flu is a virulent human flu that causes a global outbreak, or pandemic, of serious illness. Because there is little natural immunity, the disease can spread easily from person to person. AI (Avian flu) viruses occur naturally among wild birds. Low pathogenic AI is common in birds and causes few problems. Highly pathogenic form (HPAI) is extremely infectious among humans. The rapid spread of HPAI, with outbreaks occurring at the same time, is of growing concern for human health as well as for animal health. <http://www.idahohealth.org/>

Spanish influenza caused several waves of pandemic in 1918 through 1919, resulting in 20 to 50 million deaths worldwide. Officials reported that in Sandpoint, all public gatherings were prohibited even as the local paper maintained that there was no cause for alarm. The disease simply ran its course, unchecked by actions taken by state, local or federal officials. A pandemic of Asian flu (Influenza A [H2N2]) occurred in 1957-58 where it caused about 70,000 deaths. [http://1918.pandemicflu.gov/your\\_state/idaho.htm](http://1918.pandemicflu.gov/your_state/idaho.htm).

**Lyme Disease** is caused by the bacterium *borrelia burgdorferi* and is transmitted to humans by the bite of infected blacklegged ticks. Typical symptoms include fever, headache, fatigue, and a characteristic skin rash. If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings, and the possibility of exposure to infected ticks; laboratory testing is helpful in the later stages of

disease. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics. <http://www.cdc.gov/ncidod/dvbid/lyme/>

***Pertussis*** (whooping cough) is a very contagious disease caused by a type of bacteria called *bordetella pertussis*. Pertussis is one of the most common vaccine-preventable childhood diseases in the U.S. The disease starts like the common cold, with runny nose or congestion, sneezing, and maybe mild cough or fever. But after 1 to 2 weeks, severe coughing begins. Children with the disease cough violently and rapidly, until the air is gone from their lungs and they're forced to inhale with a loud "whooping" sound. People with pertussis usually spread the disease by coughing or sneezing while in close contact with others, who then breathe in the pertussis bacteria. <http://www.cdc.gov/Features/Pertussis/>

***Salmonellosis*** is a group of bacteria that can cause diarrheal illness in humans. Most persons infected with Salmonella develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts 4 to 7 days, and most persons recover without treatment. The elderly, infants, and those with impaired immune systems are more likely to have a severe illness. Salmonella are usually transmitted to humans by eating foods contaminated with animal feces. Contaminated foods usually look and smell normal. Contaminated foods are often of animal origin, such as beef, poultry, milk, or eggs, but any food, including vegetables, may become contaminated. Thorough cooking kills salmonella. Food may also become contaminated by the hands of an infected food handler who did not wash hands with soap after using the restroom. Salmonella may also be found in the feces of pets with diarrhea, and people can become infected if they do not wash their hands after contact. (CDC, 2009). [http://www.cdc.gov/nczved/dfbmd/disease\\_listing/salmonellosis\\_gi.html](http://www.cdc.gov/nczved/dfbmd/disease_listing/salmonellosis_gi.html)

**Table 3-5** presents a summary of reportable diseases in Bonner County for the years 2005, 2006 and 2007 from the Idaho Department of Health. This table is followed by other accounts of communicable disease in Bonner County.

TABLE 3-5 BONNER COUNTY REPORTABLE DISEASE SUMMARY				
Disease	2005 Cases	2006 Cases	2007 Cases	3 Year Total
Campylobacteriosis	5	4	2	11
Cryptosporidiosis	0	1	2	3
E. Coli	1	0	1	2
Giardiasis	4	5	3	12
Hepatitis A	0	1	0	1
Hepatitis B	1	2	2	5
Hepatitis C	18	14	10	42
Lyme Disease	0	1	1	2
Aseptic Meningitis	0	0	1	1
Malaria	0	1	0	1
Pertussis	4	1	0	5
Rabies	1	0	1	2
Tick-Borne Relapsing Fever	1	0	1	2
Salmonellosis	4	1	3	8

Idaho Department of Health Reportable Disease Summary

- During the period 1985 to 2004, one person died of Creutzfeldt-Jakob Disease in Bonner County (Idaho Department of Health and Welfare, Bureau of Health Policy and Vital Statistics, 2009).
- During the period 2005 to 2007, one influenza-related death occurred in an individual over the age of 50 in Region 1 of the Idaho Health Department which includes Bonner County. (Idaho Department of Health and Welfare, Bureau of Health Policy and Vital Statistics, 2009).

### ***Probability of Future Events***

The probability of an epidemic in Bonner County is difficult to assess based on history and current data. Given the rural nature of most of Bonner County, the probability of rapid infection is somewhat less than in urban areas. Individual infectious diseases will likely be reported in Bonner County on an annual basis giving this hazard a probability rating of “common”.

## **Dam Failure**

### ***Hazard Description***

Dams have been placed around Idaho for many reasons including recreation, flood control, irrigation, water supply, hydroelectricity, and mining. Dams are built and owned by a variety of entities such as private individuals, utilities, and the government. Dams come in all shapes and sizes from small earthen dams to large concrete structures. The structural integrity of a dam depends on its design, maintenance, and weather/drainage situation. Problems arise when a dam fails and people and/or property lie in its inundation area. Dams can fail for a variety of reasons including poor maintenance, overwhelming weather and flow conditions, or by an intentional act. Dam failure can be compared to riverine or flash flooding in the area downstream from the dam, and sometimes for long distances from the dam, depending on the amount of water retained and the drainage area. Others may be located in areas that result in little if any damages during a failure.

The United States Bureau of Reclamation's Dam Safety Program categorizes dams into following three categories (U.S. BOR, 2004). These ratings are based on potential for loss of life and property damage from the failure of the dam, not the condition or probability of the dam failing.

- **High-Hazard Dams:** A dam where failure or misoperation will probably cause loss of human life.
- **Significant Hazard Dam:** A dam that would not be expected to cause loss of life if it failed, but would cause economic damage, disruption of lifeline facilities, or impact other concerns.
- **Low Hazard Dam:** A dam where failure or misoperation would not result in loss of human life and low economic and/or environmental loss. Losses are usually limited to the owners property.

### ***Existing Dams in the Area***

Major water impoundment structures in Bonner County exist on Lake Pend Oreille at the Albeni Falls Dam and Cabinet Gorge Dam and are used mainly for hydroelectric power. Priest Lake is controlled by a small dam for recreation in the summer. These dams and others upstream in Montana with the potential to impact Bonner County, are described below.

**Albeni Falls Dam** is located on the Pend Oreille River approximately 6 miles west of Priest River. The dam, a 65-feet-high concrete structure, was completed in 1952 at a cost of \$34 million. It is owned by the U.S. Army Corps of Engineers and operated for hydroelectric power (42,600 kilowatts). The dam also functions to reduce the maximum lake level for flood control. The reservoir has a storage capacity of 1.56 million acre feet of water and provides recreational areas for visitors.



No emergency action plan for the Albeni Falls Dam was available for review. [http://www.idwr.idaho.gov/water/stream\\_dam/dams/Albeni.htm](http://www.idwr.idaho.gov/water/stream_dam/dams/Albeni.htm).

**Cabinet Gorge Dam** is located on the Clark Fork River, ¼-mile west of the Idaho-Montana state line and 20 miles downstream of the larger Noxon Rapids Dam. Operated by Avista Corp. for hydroelectric power generation (20,000 kilowatts), Cabinet Gorge lies 7.5 miles upstream of the town of Clark Fork and 11 miles upstream of Lake Pend Oreille. Cabinet Gorge impounds a 20-mile long reservoir, containing approximately 105,000 acre-feet of storage at full pool elevation (2,175 feet). The dam, a 395 foot concrete arch between two concrete abutments, is 208 feet tall at its highest point. The spillway is controlled by eight vertical lift spillgates, each 40 feet wide by 35 feet high.



The Emergency Action Plan (EAP) prepared for the Cabinet Gorge Dam (Avista Corp., 2005) presents an inundation table for a “fair weather” breach which is the scenario generally considered to pose the greatest potential for loss of human life. A fair weather breach is considered “worst case” scenario, and corresponds to a failure of a 280-foot section of the arch spillway. The inundation table indicates time to the front of the flood

wave/maximum flood height, as follows: Cabinet Fish Hatchery (0.9 miles downstream) 3 minutes/15-25 feet flood height; Diamond T Ranch (2.6 miles downstream) 7 minute/5 feet flood height; River Lake Estates (6.1 miles downstream) 14 minutes/5-8 feet flood height; and, town of Clark Fork (7.5 miles downstream) 18 minutes/minimal (zero flood for most of town). The

inundation boundary is terminated at the mouth of Lake Pend Oreille since the flood wave would not seriously impact the elevation of the lake.

A 127-decibel siren has been installed on the Cabinet Gorge spillway to warn immediate downstream residents (up to two miles away) of any imminent or actual failure of the dam. Avista has also installed a 112-decibel siren at the Clark Fork Fire Hall. The warning device has four tones and a live, public address system, the siren has a two-mile range and is activated by local officials during an emergency. One of the tones is tested daily; all four tones and the P.A. system are publicly tested each month.

**Noxon Rapids Dam** is located on the Clark Fork River in Montana, 2½ miles upstream of the town of Noxon, Montana and about 20 miles upstream of the Cabinet Gorge Dam in Bonner County. The project reservoir impounds 230,700 acre-feet of live storage with 74,600 acre-feet of storage in the top 10 feet. Reservoir area is 7,940 acres at normal pond elevation of 2,331 feet. The dam has a total length of 5,840 feet consisting of a concrete gravity-type intake section with integral powerhouse, a concrete gravity-type spillway section, and two earthfill embankment sections extending 1,726 feet and 3,060 feet from the powerhouse and spillway sections.

The EAP prepared for the Noxon Rapids Dam (Washington Water and Power Company, 1988) presents an inundation table for a fair weather breach and corresponds to a failure of two spillway gates and one pier. The outflow from the fair weather dam break of Noxon Rapids Dam would not overtop Cabinet Gorge Dam. Inundation maps showed that the Montana community of Noxon would be partially inundated but the town of Clark Fork in Bonner County was not inundated.

**Hungry Horse Dam**, on the South Fork of the Flathead River, is located nine miles southwest of Columbia Falls, Montana. It was constructed in 1948-1953 and was modified in 1994-1995. The dam is owned by the U.S. Bureau of Reclamation and is the fourth largest and highest dam in the world. Built entirely of concrete, the dam is 564 feet high and 2115 feet in length. The dam was originally built as a project for power generation, flood control, and irrigation. The reservoir impounds over 3 million acre-feet. If breached, the Hungry Horse reservoir would impact the Clark Fork River system where several dams exist before the river enters Bonner County.

<http://www.usbr.gov/dataweb/dams/mt00565.htm>

**Outlet Dam** is a small dam on Priest Lake which controls the elevation of the lake for recreation purposes and releases water for downstream power consumption. The dam is operated by Avista Corp. under an agreement with the State of Idaho, the owner of the dam.



According to the Bonner County HAZUS data, other low hazard dams in the county include: Blanchard Creek, Stoneridge, Roberts, Rich, Kelsey, Matthews, Hayden, Jewel Lake, Garfield, Stevens, Rice Paddie Dikes, Sandpoint, Grouse Creek South, Grouse Creek North. These are all low hazard dams. There have been no repetitive losses in Bonner County associated with the Dam Failure hazard.

#### ***Extent and Location of Previous Hazard Events***

There is no record of a dam failure in Bonner County.

#### ***Probability of Future Events***

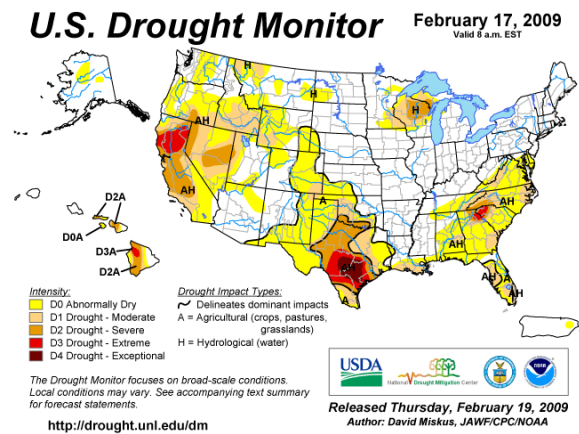
The probability of a significant dam breach in Bonner County is ranked as “infrequent”.

## Drought

### Hazard Description

Drought is an extended period of unusually dry weather. Drought is a special type of disaster because its occurrence does not require evacuation of an area nor does it constitute an immediate threat to life or property. People are not suddenly rendered homeless or without food and clothing. The basic effect of a drought is economic hardship, but it does, in the end, resemble other types of disasters in that victims can be deprived of their livelihoods and communities can suffer economic decline.

The effects of drought become apparent with a longer duration because more and more moisture-related activities are affected. Non-irrigated croplands are most susceptible to moisture shortages. Rangeland and irrigated agricultural lands do not feel the effects as quickly as the non-irrigated, cultivated acreage, but their yields can also be greatly reduced due to drought.



In periods of severe drought, range fires can destroy the economic potential of the agricultural industry, and wildlife habitat in, and adjacent to, the fire areas. Under extreme drought conditions, lakes, reservoirs, and rivers can be subject to severe water shortages. Insect infestation is an additional hazard resulting from drought. Idaho and other western states are experiencing forest health challenges primarily due to drought, insects, unusual warm temperatures and disease and past fire suppression activities.

The Idaho Drought Plan provides current and historic information, guidance and a framework for management of water shortage situations and is designed as a resource and educational tool to be used when future water shortages occur.

### Extent and Location of Previous Hazard Events

There have been no repetitive losses in Bonner County associated with the Drought hazard. Drought events and their associated crop and property damages, as reported in the SHELUDS database, are presented in **Table 3-6**.

TABLE 3-6 DROUGHT EVENTS IN BONNER COUNTY				
Date	Location	Property Damage	Crop Damage	Source
August 1, 1988	Bonner County	-	\$11,364	SHELDUS
October 1, 1988	Bonner County	\$11,364	\$11,364	SHELDUS
June 1, 1992	Bonner County	-	\$1,136,364	SHELDUS
July 1, 1992	Bonner County	-	\$1,136,364	SHELDUS
August 1, 1992	Bonner County	-	\$1,136,364	SHELDUS
September 1, 1992	Bonner County	-	\$1,136,364	SHELDUS
October 1, 1992	Bonner County	\$113,636	\$1,136,364	SHELDUS

Drought disasters which occurred in Idaho from 1976-2000 are highlighted in the State of Idaho Hazard Mitigation Plan (IBHS, 2007). Bonner County is not among the counties listed as having had a drought disaster.

### ***Probability of Future Events***

Based on historic conditions, the probability of future drought events in Bonner County are ranked as “infrequent”, occurring less than once every 10 years.

## Earthquake

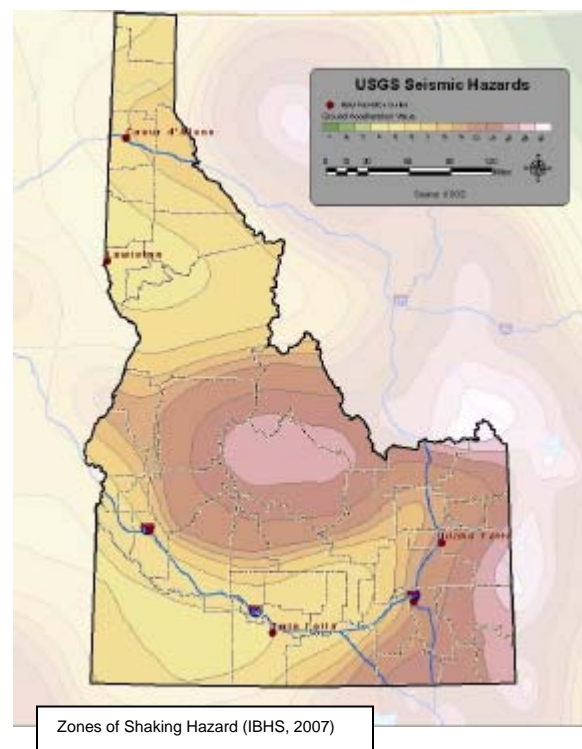
### *Hazard Description*

An earthquake is a trembling of the ground resulting from the sudden shifting of rock beneath the earth's crust. Earthquakes may cause landslides and rupture dams. Severe earthquakes destroy power and telephone lines, gas, sewer, or water mains, which, in turn, may set off fires and/or hinder firefighting or rescue efforts. Earthquakes also may cause buildings and bridges to collapse.

Earthquakes occur along faults, which are fractures or fracture zones in the earth across which there may be relative motion. The Hazardous Areas Component of the Bonner County Comprehensive Plan presents information on faults and earthquakes (Bonner County Planning Department, 2002a), and is summarized below.

Two major geologic faults cross Bonner County; the Purcell Trench and the Hope Fault. The Purcell Trench extends from the southern boundary of Bonner County, intersecting the Hope Fault at the city of Sandpoint, and continues to the city of Bonners Ferry. The Hope Fault is a major structural element that extends for about 80 miles southeast of Hope and probably many miles to the northwest. The main Hope Fault traverses Bonner County and then branches far out to the northwest from the town of Hope, across the Purcell Trench and into the Selkirk Mountains. The Newport Fault zone parallels the entire length of the eastern shore of Priest Lake. However, the fault is buried under glacial and fluvial deposits through most of the area. Areas where the fault zone is exposed and other areas where bedrock is heavily fractured are considered potentially hazardous areas. There are also a number of faults in the mountainous areas on the eastern side of Lake Pend Oreille. Approximate fault locations are shown on the maps contained in **Appendix E**.

According to the Idaho Bureau of Homeland Security, Bonner County has a moderate seismic risk. According to the Idaho Transportation Department's map of effective peak velocity-related acceleration coefficient, there are no active faults in Bonner County. However, the City of Sandpoint is largely built on thick Quaternary lake deposits which may amplify shaking and liquefaction relative to bedrock under some conditions.



### ***Location and Extent of Previous Hazard Events***

Idaho is situated where the Basin and Range and Rocky Mountain provinces meet and experiences the effects of tremendous crustal stretching. In Bonner County, most ground shaking activity in the past has been the result of earthquakes centered elsewhere. One such earthquake was the Borah Peak event on October 28, 1983. This earthquake is the largest ever recorded in Idaho, both in terms of magnitude and in the amount of property damage. The earthquake caused two deaths in Challis, about 120 miles northeast of Boise, and an estimated \$12.5 million in damage in the Challis-Mackay area. A maximum Modified Mercalli intensity of IX was assigned to this earthquake because of surface faulting. Vibrational damage to structures was assigned intensities in the VI to VII range. The quake registered 7.4 on the Richter Scale and is reported to have cracked walls of at least one building in Sandpoint.

Several earthquakes have been documented with epicenters near Rathdrum, Idaho, 60 miles south of Priest Lake. The largest of these events occurred in 1918, registering 5.5 on the Richter Scale with a Modified Mercalli scale intensity of VII. The most recent was in 1969, with a Modified Mercalli scale intensity of IV (Stover, in Bonner Co. Planning Department, 2002a).

Several quakes have occurred since 1953 with epicenters near Bonners Ferry, Idaho, approximately 22 miles east of Priest Lake and 33 miles north of Sandpoint. The most recent of these was in 1968 and the largest had a Modified Mercalli scale intensity of IV (Stover, in Bonner County Planning Department, 2002a). There have been no repetitive losses in Bonner County associated with the Earthquake hazard.

According to the Idaho Geological Survey (Phillips, 2009), a minimum of 71 earthquakes have occurred within 100 kilometers of Sandpoint between 1906 and 1980. The largest magnitude reported was 4. The largest shaking intensity (Modified Mercalli) was VI. Many smaller earthquakes with magnitudes less than 2.5 have occurred but these have not been reliably catalogued. Most of these earthquakes did not actually occur within Bonner County. Several larger earthquakes have occurred at greater distances and were felt in Bonner County. A recent example of a distant earthquake that was felt in Bonner County is the magnitude 5.6 Dillon, Montana earthquake of July 26, 2005.

### ***Regulatory Framework***

The 1991 Uniform Building Code (UBC), a nationwide industry standard, sets construction standard for different seismic zones in the nation. The UBC ranks seismic zones in the United States on a scale of 1 (low) to 4 (extreme). Bonner County is in the moderate seismic zone of 2B. A map developed by the U.S. Geological Survey (USGS) showing areas of relative seismic shaking hazards puts Bonner County in three risk categories. The northern portion of the county has a lower risk of ground shaking while the southeast corner has a higher risk. The remainder of the county including all incorporated cities have a moderate risk of seismic ground shaking.

These designations are largely based on the potential for earthquakes centered elsewhere causing local damage. **Appendix D** presents earthquake risk maps showing Bonner County critical facilities.

Currently there are no building codes in Bonner County. However, buildings within the city limits of incorporated towns must comply with city building codes where these exist. A preliminary seismic assessment was conducted during development of the AHM Plan. Retired engineer Bob Hatfield made a preliminary assessment of unreinforced masonry buildings in downtown Sandpoint. A summary of this evaluation is presented in **Table 3-7**. Unreinforced masonry buildings also exist in downtown Priest River.

TABLE 3-7 UNREINFORCED MASONRY BUILDINGS IN SANDPOINT			
Address	Current Occupant	Address	Current Occupant
101-1 <sup>st</sup> Street	Tamarack Realty/ASAP Tax	109-1 <sup>st</sup> Street	Sportsman Barber/JUB Engineers/Vacationville
119-1 <sup>st</sup> Street	Vacant	121-1 <sup>st</sup> Street	Choice Funding
209-1 <sup>st</sup> Street	Pastime Bar/Brunswick Café	213-1 <sup>st</sup> Street	Sandpoint Realty
301-1 <sup>st</sup> Street	Finan McDonald	305-1 <sup>st</sup> Street	Riverstar Real Estate
311-1 <sup>st</sup> Street	Coldwater Creek	313-1 <sup>st</sup> Street	Great Stuff
317-1 <sup>st</sup> Street	Zany Zebra	319-1 <sup>st</sup> Street	Scandinavian Affair
321-1 <sup>st</sup> Street	Evergreen Realty	323-1 <sup>st</sup> Street	Hallans Gallery
327-1 <sup>st</sup> Street	Larson's	329-1 <sup>st</sup> Street	Le Creuset, Fritz's Fry Pan
2 <sup>nd</sup> & Cedar	Cabin Fever	1 <sup>st</sup> & Pine	Inn at Sand Creek
200 N. 1 <sup>st</sup> Street	3 businesses/Hey Cupcake	300 N. 1 <sup>st</sup> Street	Panida Theater
3 <sup>rd</sup> & Cedar	Belwood Furniture	417 Alder Street	1 <sup>st</sup> Presbyterian Church
419 N. 2 <sup>nd</sup> Street	1 <sup>st</sup> Avenue Title		

Survey conducted by Bob Hatfield, retired engineer

### **Probability of Future Events**

The USGS recognizes that “random earthquakes” not associated with known faults may occur within the region. The probability of such an event in Bonner County is very low. According to the USGS, there is a less than 0.1 percent chance of magnitude 7 or greater event within 50 kilometers of Sandpoint over the next 100 years. For a magnitude 6 event or greater, the probability rises to 5-10 percent. A magnitude 5 or larger event has about 40-50 percent probability (Phillips, 2009). <http://eqint.cr.usgs.gov/eqprob/2002/index.php>

Although Bonner County is rated as having a moderate seismic risk (IBHS, 2007); the probability of a future earthquakes causing significant damage is rated as “infrequent”.

## Flooding

### *Hazard Description*

A flood is a natural event for rivers and streams. Excess water from snowmelt and rainfall accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers and lakes that are subject to recurring floods. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Urban flooding is the result of development and the ground's decreased ability to absorb the rainfall.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states. Floods kill an average of 150 people a year nationwide. Most injuries and deaths occur when people are swept away by flood currents and most property damage results from inundation by sediment-laden water. Faster moving floodwater can wash buildings off their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Effects from flooding can also include floating fuel tanks, inundation of subdivisions, road washouts, and basement flooding all of which can result in extensive damage.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and flooding. The NWS Warning and Advisory Criteria for flooding is presented in **Table 3-8**.

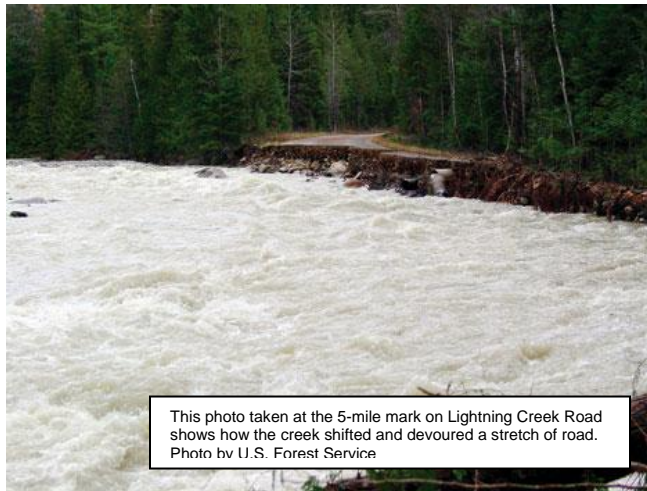
TABLE 3-8 WARNING AND ADVISORY CRITERIA FOR FLOODING	
Weather Event	Criteria
Flash Flood Warning	Flooding is imminent, water levels rise rapidly with inundation occurring in less than 6 hours.
Flood Warning	Flooding is expected to occur more than 6 hours after the causative event.

Source: National Weather Service

### *Location and Extent of Previous Hazard Events*

**Clark Fork** - The City of Clark Fork is located in a triangle formed by Lightning Creek to the west, Mosquito Creek to the east, and the Clark Fork River to the south. The Clark Fork River originates in the mountains of Montana and drains a basin of approximately 22,000 square miles. Lightning and Mosquito Creeks drain heavily timbered mountainous terrain to the north, and flow southerly to their confluence with the Clark Fork River, south of the town of Clark Fork. The City of Clark Fork is located on flood-prone land which has its flooding potential from the Clark Fork River, Lightning Creek, and Mosquito Creek. The major cause of flooding is rainfall on snow with subsequent melting (FEMA, 1981).

Two severe floods from the Clark Fork River occurred in 1894 and in 1948. The flood of June 1948 had a discharge of 153,000 cubic feet per second (cfs). Both floods affected only the southern-most areas of the city. A flood from Lightning Creek in December 1921 affected only the southwestern part of the city. In January 1974, major flows were experienced in all tributaries near the City of Clark Fork. Lightning Creek carried large amounts of silt and debris, but no major flooding of the city resulted (FEMA, 1981).



A levee protects the west side of the city of Clark Fork from the 100-year flood hazards of Lightning Creek. The U.S. Army Corps of Engineers rebuilt the levee in 1959 and it was reinforced in 2008. Dams on the upper Clark Fork River decrease the chances of flooding. The physical proximity of Clark Fork also protects the city from 100-year inundation. However, the greater part of the City of Clark Fork is affected by 500-year flows from the Clark Fork River, Lightning Creek, and Mosquito Creek.

**Kootenai** – Flooding occurs on a regular basis in the City of Kootenai because parts of the current stormwater system do not have adequate capacity for rainfall, land use, and soil conditions. The area is relatively flat, with an average slope of approximately 1 percent. The runoff flows in a southeast direction from pastureland in the north through residential and commercial areas before being deposited in Boyer Slough and Land Pend Oreille (Black Diamond Engineering, 2005).

**Priest River** - The source of flooding for the City of Priest River is the Priest River and Pend Oreille River. Pend Oreille River is a reservoir-like body of water due to Albeni Falls Dam. The flooding from Priest River is confined to the shore areas, but the backwater from Pend Oreille River into Priest River floods a substantially larger area.

A major impoundment structure exists on Lake Pend Oreille at Albeni Falls. This is mainly used for power production purposes and to control the annual minimum lake level to an elevation higher than would be experienced under the natural conditions and to reduce the maximum lake level for floods.

**Sandpoint** - The City of Sandpoint is located on Lake Pend Oreille at the confluence of Lake Pend Oreille and Sand Creek. Sand Creek originates north of the City of Sandpoint and drains an area of 38.5 square miles. The City of Sandpoint is situated on relatively flat land, with mountainous terrain to the west and northwest, and Lake Pend Oreille to the east and south.

The main sources of flooding for the city are Sand Creek and Lake Pend Oreille. Lake Pend Oreille's elevation is controlled by Albeni Falls Dam. FEMA and the NFIP have determined that flood prone areas in Sandpoint occur in the residential area south of the Central Business District and City Beach. Sand Creek and Chuck Slough also pose flood dangers as each are located along current municipal boundaries. These areas are designated with the FEMA 100-year flood boundary that represents a 1 percent chance of flooding (Sandpoint Comprehensive Plan, 2009).

The majority of flooding in Bonner County is around the various rivers and streams that enter and exit Bonner County lakes. The largest floods have occurred in late winter, when warm rains have fallen on melting snow. During these rain-on-snow events, Bonner County's smaller lakes have been subject to some flooding. Flood season generally begins in April, peaks in May/June and ends in July.

Sandpoint received excessive damage in the flood of January 1974. The Governor proclaimed the county a disaster area. Excerpts from the local newspapers (Sandpoint Daily Bee and Sandpoint News Bulletin) over a several day period and details from Sheriff's office reports are presented below.

*Local authorities expressed concern that the city's water reservoir dam would give way. Five men worked for over two hours removing ice from the dam. An eight-inch water main that runs across Sand Creek on Popcycle Road was washed out. Water caused excessive damage to several streets in Sandpoint, all of which required repair work when the water receded.*

*The Sheriff's Office reported flooding damage to area roads and infrastructure. Two feet of water was running over the dam in Strong Creek. Highway 200 at Laclede was closed. Talache Roach was washed out and closed. Travel to Priest River was via Dufort Road. Baldy Road had washouts. Pleasant View Road had washouts. Dufort Road was closed to all truck traffic. Colburn water works was out of service. Bottle Bay Road was washed out. Cocolalla Lake was up eight inches. And, the old city pier in Sandpoint was partially washed away.*

*The Sheriff's department reported that floodwater on Rapid Lightning Creek had completely destroyed one home and damaged the front porch and garage of a second dwelling. A portion of US-95 between Sandpoint and Colburn was covered by more than two feet of water, and almost one-third of the highway had washed away. The east end of the Bronx cutoff was completely washed away by a rampaging Sand Creek. The Pack River Road was completely washed out above Edna's Tavern.*

*On January 18, 1974, the Governor sought national disaster status and the U.S. Army Corps of Engineers allowed additional storage in Lake Pend Oreille. Estimates released*

indicated that at least \$3 million (\$12.8 million in 2008 dollars) in damage was done to county roads alone during the flooding. The City of Sandpoint estimated its damage at nearly \$60,000 (\$256,000 in 2008 dollars).

Bonner County has seen other significant floods since the 1974 flood described above. **Table 3-9** presents the flood listings in from the NCDC and SHELDUS databases. An account of the November 7, 2007 flood in Clark Fork is also presented below.

TABLE 3-9 BONNER COUNTY FLOODS			
Date	Location	Property Damage (2007 Adjust)	Source
February 15, 1982	Bonner County	\$1,000,000	SHELDUS
March 2, 1989	Bonner County	\$7,143	SHELDUS
November 24, 1990	Bonner County	\$10,000	SHELDUS
April 5, 1991	Bonner County	\$500,000	SHELDUS
February 8, 1996	Bonner County	-	SHELDUS
April 24, 1996	Bonner County	\$16,667	SHELDUS
May 1, 1997	Bonner County	\$571,429	SHELDUS
June 1, 1997	Bonner County	\$666,667	SHELDUS
May 26, 1998	Sandpoint, Bonner County	\$100,000	SHELDUS, NWS
November 7, 2006	Clark Fork	\$2,000,000	NWS

**January 22, 2005** – Thick chunks of ice the size of car doors worked their way downstream on Grouse Creek, taking small trees, branches, and everything else in their path, and causing flooding to about 15 acres near Samuels and the Colburn-Culver Road. The ice jam, occurring at an elbow in the creek's channel, was close to 40 feet wide and threatened to take out the Grouse Creek bridge once it started breaking loose. In 1997, an ice jam crushed into the bridge and high runoff from melting snow caused flooding to a church and nearby homes (*Ice Jam Threatens Bridge*, Bonner County Daily Bee).



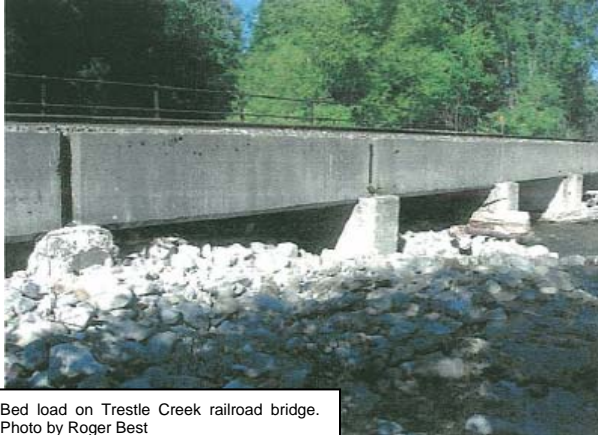
Ice jam on Grouse Creek.  
Photo by R.J. Cohn

**November 7, 2006** – Over 100 homes and residents near Clark Fork were stranded after two roads were washed out. In the Lightning Creek drainage, washouts were up to 700 feet long and 15 feet deep. A debris jam was also observed just west of Lightning Creek. The creek carried large trees that fell from mountainsides upstream. Very heavy rains over the mountains (1 foot in two days) led to flooding in other portions of Bonner County. Estimated dollar damage amount to roads was estimated to be \$2 million dollars (NCDC Storm Events database).

**May 20 and 22, 2008** – A squad of inmate workers were deployed to Trestle Creek to fortify a sandbag line shielding Trailer Haven from flood water. Montana Rail Link crews scrambled to protect railroad infrastructure on the lake's north shore. A train-mounted crane shuttled between Clark Fork and Trestle Creek to combat bed loading beneath ridges so water could continue to pass. Residents were asked to use water conservatively because flooding in Strong Creek overwhelmed a diversion dam directing water to the treatment system. Runoff from melting snowpack was sending sediment boulders and trees down the creek. The sediment formed a layer of mud on the treatment plant's sand filters, which reduced their output. The diversion dam was later completely plugged and Strong Creek found a path around the structure. The cascade of water and material in Strong Creek was also overwhelming the Montana Rail Link bridge next to Highway 200. Four excavators were scooping out tons of rock on either side of the bridge so the creek could continue to pass beneath it. Culverts under various county roads were working overtime or not at all. Water was washing over road sections on Upper Gold Creek, upper Pack River and East Spring Creek Road near the Clark Fork hatchery. (*County Continues to Grapple with Flooding*, Bonner County Daily Bee; May 22, 2008)



Sandbags along Trestle Creek, June 2008.  
Photo by Roger Best.



Bed load on Trestle Creek railroad bridge.  
Photo by Roger Best



Excavators were used to clear out rock and debris so Strong Creek could flow under a Montana Rail Link bridge. Photo by Keith Kinnaid

### ***Floodplain Management***

Flooding is different from most other hazards in that riverine flooding problems are managed through the National Flood Insurance Program (NFIP) under FEMA. FEMA conducts a Flood Insurance Study (FIS) of a region to identify the community's risk levels. The FIS includes

statistical data for river flow, rainfall, topographic surveys, as well as hydrologic and hydraulic analyses. After examining the FIS data, FEMA creates Flood Insurance Rate Maps (FIRMs) delineating the different areas of flood risk. Land areas that are at high risk for flooding are called Special Flood Hazard Areas, or floodplains. These maps are not all inclusive and other flood prone areas may exist. The FIRM maps in Bonner County are not digitized; however, Idaho is currently undergoing a map modernization process. Flood insurance studies were completed for unincorporated areas within Bonner County (1984, revised in 1987), and for the cities of Clark Fork (1981), Priest River (1984, revised in 1987) and Sandpoint (1984, revised in 1987). The maps contained in **Appendix D** present 100-year flood zones in Bonner County according to the FEMA Q3 flood data (September, 1995).

The NFIP encourages state and local governments to adopt “sound” floodplain management programs to reduce private and public property losses due to floods. As of July 31, 2009, Bonner County had 7,073 flood insurance policies covering \$1.54 billion in property value. In the City of Sandpoint, 102 flood insurance policies are in-force covering \$26.7 million in property value. East Hope has 30 policies covering \$5.34 million in property value. In the City of Priest River two flood insurance policies are in-force covering \$530,000. The City of Clark Fork has four flood insurance policies covering \$579,200 in property value. Dover has one policy in effect covering \$250,000 in property.

The NFIP Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: reduce flood losses; facilitate accurate insurance rating; and, promote the awareness of flood insurance.

The Community Rating System provides for 10 classes, with Class 1 having the most premium credit and communities in Class 10 receiving none. A community’s CRS class is based on the number of credit points calculated for the activities that are undertaken to reduce flood losses, facilitate accurate flood insurance rating, and promote the awareness of flood insurance. Bonner County participates in the CRS with a Class 9 rating. Recent activities completed and future opportunities for Bonner County to decrease their CRS rating are presented in **Table 3-10**. According to the County Planning Director, until Bonner County adopts building codes, the CRS rating will not decrease below Class 8.

**TABLE 3-10  
COMMUNITY RATING SYSTEM  
RECENT ACTIVITIES AND FUTURE OPPORTUNITIES**

<b>CRS Activities</b>	<b>Recent Activities and Future Opportunities</b>
<b><i>Public Information Activities (Series 300)</i></b>	
310 Elevation Certificates.	Ten copies of elevation certificates since 2004 were provided.
310 Elevation Certificates.	Bonner County has begun a process of scanning and storing floodplain and building permit data on a server, with off-site back-up. This process began in January 2009 and will continue.
320 Map Information Service.	The annual letter; mailing list and log of floodplain inquiries were provided. Each update of a FIRM panel is kept together with the earlier versions in the county floodplain map file. Each letter of map revision (LOMA) is entered by hand onto current FIRM panel. Bonner County Planning Department maintains a database of LOMAs, which is updated as the amendments are issued.
330 Outreach Projects.	In 2009, Bonner County's floodplain outreach program consisted of training real estate agents, title officers and lending agencies on the county's floodplain regulations and the NFIP, along with other recent code amendments. The floodplain training was part of a 2-hour training session which also included discussion of new waterfront setback and buffer regulations and subdivision changes. Planning staff also conducted three separate one-on-one sessions with the real estate companies and one session with the local contractors' association on the new county regulations, including floodplain.
340 Hazard Disclosure.	To be completed during 2010.
350 Flood Protection Information.	Bonner County's new land use codes are linked on the county's website at <a href="http://www.co.bonner.id.us/planning/index.html">http://www.co.bonner.id.us/planning/index.html</a>
360 Flood Protection Assistance.	Bonner County has three compliance personnel who are SEEP (Stormwater Erosion Control Education Program) certified.
<b><i>Mapping and Regulatory Activities (Series 400)</i></b>	
410 Additional Flood Data.	Due to the significant difference between the actual grade elevations and the limits of the special flood hazard area for Golden Tee/Hidden Lakes golf course development (a 500-unit PUD) Bonner County determined the area is within a flood hazard zone and required development be elevated accordingly.
420 Open Space Preservation.	A GIS map was provided showing the floodplain acreage within Bonner County and the number of acres within the waterfront "open space," where no structures may be built. The analysis reveals 6,608 acres of open space (no-build) areas are preserved within the county's 23,676 acres of floodplain. The land use coded regulating required setbacks, establishing maximum impervious surface coverage and retention of vegetative buffers were provided.
430 Higher Regulatory Standards.	Bonner County adopted a new ordinance December 5, 2008, that requires new construction and substantial improvements be elevated or flood-proofed 1 foot above BFE; prohibits development with in the floodway; and prohibits critical facilities within the special flood hazard area.
430 Land Development.	With the adoption of the new code in December of 2008, Bonner County created new, larger lot zoning districts: Rural 5; Rural 10; Ag/Forestry 10; Ag/Forestry 20 and Forest 40. A GIS analysis that 21,778 acres of the 23,676 acres of floodplain are within the low density zoning districts of 5 acres and greater.
440 Flood Data Maintenance.	A copy of a screen shot of the Pack River Delta area was provided, showing GIS layers, including parcel data, section lines, NHD water bodies and the floodplain.
450 Stormwater Management.	Documentation was provided including regulations; design storm definition; samples of plat and building location permit stormwater management plans; copy of an issued building location permit showing fees collected for stormwater, a stormwater plan and permission granted to Bonner County to enter the property to inspect.
<b><i>Flood Damage Reduction Activities (Series 500)</i></b>	
510 Floodplain Management Planning.	This activity will be considered for next year. A copy of the newly adopted Emergency Operations Plan, floodplain excerpt was provided. The Bonner County AHMP will be provided next year.
<b><i>Flood Preparedness Activities (Series 600)</i></b>	
610 Flood Warning Program.	Excerpts were provided from the AHMP; Emergency Alert System; Emergency Operations Plan and StormReady certification from the National Weather Service.
630 Dam Safety.	Documentation on live siren tests, tabletop exercises and community open house from Avista Corp were provided.

Source: Letter dated July 29, 2009 from Clare Marley, Bonner County Planning Director to Linda Ryan, CRS Representative

Repetitive loss properties under the NFIP are those which have had two or more flood losses reported which were paid more than \$1,000 for each loss within a 10 year period. Significant repetitive loss properties are those that have experienced four or more separate building and content claims since 1978 each exceeding \$5,000. Bonner County has no repetitive loss or significant repetitive loss properties.

FEMA has identified roles and responsibilities for communities in the flood insurance program. These responsibilities, fulfilled by the Bonner County Planning Department, include permit review, compliance determination, inspections, enforcement, record keeping, investigation of complaints, maintenance of flood maps and flood data, and dissemination of floodplain management information. Review of construction plans and inspections of completed structures within the floodplain are presently performed by the private sector.

Bonner County adopted a flood prevention ordinance in 1987 (Ordinance #177, Chapter 16, Title 12, Bonner County Revised Code). The purpose of the flood damage prevention ordinance was to “guide development in the floodway and flood fringe areas of any watercourse that floods and; to minimize adverse effects to adjacent property and; to maximize the safety of the public”. Bonner County’s flood plain ordinance requirements limit all development to elevations at or above the 100-year floodplain elevation. The Bonner County Planning and Zoning Department underwent a land use code reform in 2008.

### ***Probability of Future Events***

Flooding probabilities are shown through the mapping of floodplains. The 100-year floodplain has a 1 percent probability of being exceeded in any given year. Based on the frequency of historic events, the probability that some degree of flooding will occur in Bonner County once every decade is high. Therefore, the probability of future flood events is rated as “frequent”.

### ***Past Flood Mitigation Projects***

Major impoundment structures were built on Lake Pend Oreille at Albeni Falls Dam and Clark Fork at Cabinet Gorge Dam to offer flood control protection. A levee was constructed in 1959 by the U.S. Army Corps of Engineers on the east bank of Lightning Creek from its mouth to approximately two miles upstream. This levee offers protection from a 100-year flood event to the City of Clark Fork (FEMA, 1987C).

A number of flood mitigation projects have been completed in Bonner County. During 2008, woody debris was removed from the Lightning Creek stream channel upstream of the Highway 200 bridge. **Table 3-11** presents projects completed by the Bonner County Road and Bridge Department over the ten year period 1999 – 2008.

**TABLE 3-11**  
**FLOOD MITIGATION COMPLETED IN BONNER COUNTY; 1999-2008**

District	Road Name	Repair/Mitigation
1	Schneiders Road	Rebuilt Road and Installed larger culvert at creek crossing
1	Eich Road	Installed larger culvert at Fish Creek and armored slope with rock
1	Fish Creek Road	Installed larger culvert at stream crossing and armored slope with rock
1	Eureka Road	Installed larger culvert at stream crossing and armored slope with rock
1	Blacktail Road	Installed larger culvert at stream crossing and installed road fabric and raised the road
2	Hoo Doo Loop	Installed larger culvert
2	Squaw Valley Road	Installed larger culvert at stream crossing and armored slope with rock
2	Bear Paw Road	Moved road away from creek
2	Blue Lake Road	Installed larger culvert
3	Pack River Road	Repaired 1/4 mile of road and installed larger culverts at Hellroaring Creek
3	Upper Gold Creek Road	Rebuilt Road and armored slope at Rapid Lightning Creek
3	E. Spring Creek Road	Rebuilt Road and armored slope along Lightning Creek
3	Lower Pack River Road	Rebuilt shoulder and installed armoring along slope

Source: Ryan Luttmann, Bonner County Road and Bridge

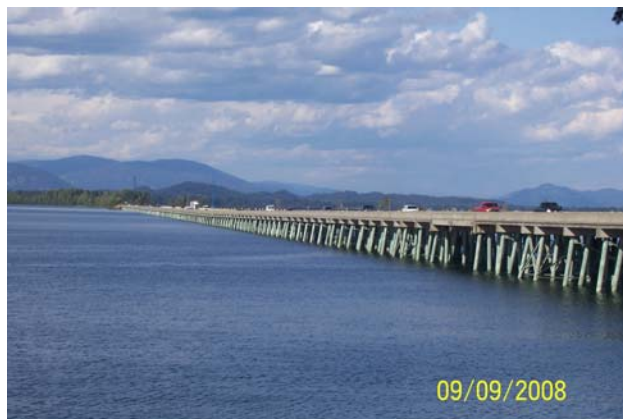
Nonstructural measures of flood protection are also being used to aid in the prevention of future flood damage. These are in the form of land-use regulations which control building within areas that have a high risk of flooding. The cities use zoning regulations, enforced by Bonner County, which restricts building within the 100-year flood plain. These regulations adhere to the standards and requirements set forth by the FEMA.

## Ground Transportation Accidents

### *Hazard Description*

Ground transportation accidents are a common occurrence in Bonner County and occasionally fatalities occur. The major highways in Bonner County include U.S. Route 2 (US-2), U.S. Route 95 (US-95), State Highway 41 (SH-41), State Highway 57 (SH-57), and State Highway 200 (SH-200). These highways are described briefly below.

**US-2** (Albeni Highway or Dover Highway) is a state highway running in Bonner and Boundary counties. It extends 80 miles from the Washington state line and SH-41 in Oldtown, east to the Montana state line near Moyie Springs. Average daily traffic on US-2 in Idaho for the years 2003-2007 is estimated to be 21,787 (ITD, 2007).



**US-95** is a four lane highway running north of Coeur d'Alene to Sandpoint and its junction with US-2. The approach to Sandpoint is a two-mile long bridge across Lake Pend Oreille. Groundbreaking took place in October 2008 for a controversial bypass around Sandpoint's downtown business district. US-2 and US-95 run concurrent for 35 miles north of Sandpoint into Boundary County. Average daily traffic flow on US-95 through Idaho for the years 2003-2007 was 23,471 (ITD, 2007).

**SH-41** runs from Interstate 90 in Post Falls through the communities of Spirit Lake and Blanchard to US-2 on the Washington state line. The northernmost 0.41 miles of SH-41 runs along State Street, with the southbound lane in the town of Newport, Washington, and the northbound lane in Oldtown, Idaho. Average daily traffic count on SH-41 for the years 2003-2007 was 30,005 (ITD, 2007).



**SH-57** is a route from Priest River to Nordman and serves the community of Priest River. During the time frame 2003-2007 SH-57 had an average daily traffic rate of 6,870 (ITD, 2007).

**SH-200** (Pend Oreille Scenic Byway) is a two lane highway from Ponderay eastward to the Montana border. SH-200 starts at its western junction and terminus at US-95. The highway heads eastward along the north shores of Lake Pend Oreille until it ends at the Montana border and becomes Montana Highway 200. The

road passes through the towns of Ponderay, Kootenai, Hope, East Hope, and Clark Fork. Average daily traffic count during the years 2003-2007 for SH 200 was 16,780 (ITD, 2007).

### ***Location and Extent of Previous Hazard Events***

The Idaho Transportation Department's District 1 North Idaho office maintains statistics on accidents occurring on Idaho's major roadways. Statistics for the period 2003 to 2007 are presented in **Table 3-12**. Idaho's Office of Highway Operations and Safety reported that during the years 2005, 2006 and 2007 there were 804, 743 and 663 ground transportation accidents in Bonner County, respectively. Sandpoint, during the years 2005, 2006 and 2007 had 230, 188, and 181 accidents, respectively. There have been no repetitive losses to Bonner County infrastructure associated with the Ground Transportation Accident hazard.

<b>TABLE 3-12 GROUND TRANSPORTATION ACCIDENTS IN BONNER COUNTY</b>		
<b>Period of Record</b>	<b>Highway</b>	<b>Number of Accidents</b>
2003 - 2007	U.S. Route 2	21,787
2003 - 2007	U.S. Route 95	6,384
2003 - 2007	State Highway 41	782
2003 - 2007	State Highway 57	127
2003 - 2007	State Highway 200	269

Source: Idaho Transportation Department

### ***Probability of Future Events***

The probability of future ground transportation accidents in Bonner County are rated as "common" events. However, the likelihood of a large wreck with mass casualties in Bonner County is considered low.

## Hazardous Material Incidents

### *Hazard Description*

A hazardous material release is the contamination of the environment (i.e. air, water, soil) by any material that because of its quantity, concentration, or physical or chemical characteristics threatens human health, the environment, or property. An accidental or intentional release of materials could produce a health hazard to those in the immediate area, downwind, and/or downstream. A hazardous material release can come from a fixed facility or via its transportation through the area. The most likely locations for a transportation-related hazardous material release are on highways or the active railways. If a transportation-related release occurred near populated areas or water supplies, serious human impacts could result.

According to the Bonner County Emergency Operations Plan (2004), hazardous materials, including agricultural chemicals, are commonly produced, stored and used in Northern Idaho and are regularly transported via the regions roadways, railroads, and pipelines. A release of hazardous materials from both fixed and transportation incidents pose possible threats to the county. Hazards ranges from small spills on roadways to major transportation releases on railways. Illegal methamphetamine operations have also become a concern. Hazardous material incidents occur frequently in Bonner County, although most are minor.

Concern was expressed at the public meetings that portions of Bonner County have the potential to become isolated if a hazardous material incident on the highway or railroad blocked evacuation routes. Due to the limited bridge crossings on Lake Pend Oreille, there is the potential that residents could become stranded in the event of a hazardous material incident.

### *Location and Extent of Previous Hazard Events*

There have been no repetitive losses to Bonner County infrastructure associated with the Hazardous Material Incident hazard. Records of hazardous material events in Bonner County, available from the National Response Center (NRC) database are summarized in **Table 3-13**.

TABLE 3-13 HAZARDOUS MATERIALEVENTS IN BONNER COUNTY							
Incident Date	Location	Incident Type	Incident Cause	Material Type	Media Affected	Suspected Responsible Party	Description of Incident
1/23/1990	Sandpoint	Mobile	Unknown	Diesel Fuel	Land	Fred Meyer	Underground tank leaking
10/12/1990	Sandpoint	Fixed	Other	Oil, Fuel: No. 6	Water	Pacific Power & Light	Underground tank leaking
11/12/1992	Hope	Unknown Sheen	Unknown	Unknown Oil	Water		Unknown / unknown sheen
5/27/1993	Oldtown	Fixed	Equipment Failure	Turbine Oil	Water	US Army COE	Generating Unit No.1 / suspected packing leak

**TABLE 3-13**  
**HAZARDOUS MATERIALEVENTS IN BONNER COUNTY**

Incident Date	Location	Incident Type	Incident Cause	Material Type	Media Affected	Suspected Responsible Party	Description of Incident
6/9/1993	Samuels	Fixed	Equipment Failure	Polychlorinated Biphenyls	Land	Bonneville Power Admin	Transformer/bushing failed
6/6/1994	Priest River	Railroad	Unknown	Oil, Fuel: No. 2-D, Diesel	Land	Burlington Northern	Locomotive saddle tank punctured. Derailment.
7/15/1994	Blanchard	Unknown Sheen	Other	Diesel	Land		Diesel fuel sprayed on a field/source unknown
7/23/1994	Clark Fork	Railroad	Other	Sodium Hydroxide	Land	Montana Rail Link	Westbound train derailed
8/28/1994	Algoma	Mobile	Transport Accident	Gasoline	Land	Valtrans Ltd Inc	Tanker truck overturned due to unknown causes
9/7/1994	Priest River	Unknown Sheen	Unknown	Unknown Oil	Water		Unknown sheen
4/14/1995	Sandpoint	Fixed	Dumping	Diesel & Ethylene Glycol	Land	Northwood Business Gp	Dumping products as a normal part of business
7/11/1995	Sandpoint	Mobile	Equipment Failure	Ethylene Glycol	Land	Waste Management	Vehicle radiator hose rupture
8/19/1995	Priest Lake	Vessel	Unknown	Unknown Oil	Water		Boat sank
10/28/1995	Elmira	Railroad	Other	Oil, Fuel: No. 2-D	Water	Burlington Northern	Locomotive struck a train
11/14/1995	Priest River	Fixed	Equipment Failure	Oil, Fuel: No. 2	Water	Office Services	300 gal oil barrel/ equipment failure
6/24/1996	Oldtown	Unknown Sheen	Unknown	Unknown Oil	Water		Unknown sheen sighting
11/26/1996	Sagle	Vessel	Unknown	Diesel	Water		Pleasure craft sank at dock due to unknown causes
12/12/1996	Sandpoint	Fixed	Other	Oil, Fuel: No. 2-D	Water	Bob's Save - Sum	10,000 above ground storage tank / vandalism of outlet pipe (cracked)
3/5/1997	Sandpoint	Fixed	Unknown	Natural Gas	Land	Washington Water Power	Gas service distribution system destroyed by fire
4/26/1997	Sagle	Fixed	Unknown	Wood Preservative	Water		Release due to structure fire
8/31/1998	Sandpoint	Fixed	Other	Sign Paint	Water	Louisiana Pacific	100-gallon cattle watering trough with paint laden water fell while being moved with backhoe
1/27/1999	Sandpoint	Unknown Sheen	Unknown	Unknown Oil	Water		Unknown sheen
5/12/1999	Sandpoint	Mobile	Other	Diesel	Water	Sheehan Construction Co.	Diesel released when bridge collapsed and backhoe fell into creek
9/16/1999	Sandpoint	Railroad	Unknown	Oil, Fuel: No. 2-D	Land	Union Pacific	Locomotive fuel tank ruptured
11/23/1999	Sandpoint	Fixed	Natural Phenomenon	Unknown Oil	Water	Louisiana Pacific	Heavy rains caused residual oils to spill into the creek
5/20/2000	Priest River	Storage Tank	Unknown	Diesel	Water		300-400 gallons of diesel released from tank to creek and Pend Oreille River
6/17/2000	Laclede	Fixed	Equipment Failure	Other Oil	Other	Riley Creek Lumber	Automatic transmission fluid oil leak on compressor

**TABLE 3-13**  
**HAZARDOUS MATERIALEVENTS IN BONNER COUNTY**

Incident Date	Location	Incident Type	Incident Cause	Material Type	Media Affected	Suspected Responsible Party	Description of Incident
7/13/2000	Ponderay	Fixed	Dumping	Chromium 6	Soil	Signus	Material dumped in vacant lot behind facility
10/7/2000	Sandpoint	Railroad	Unknown	Styrene, Potash	Water	Union Pacific Railroad	Train derailment 18 cars went into river
10/25/2000	Sandpoint	Vessel	Equipment Failure	Gasoline	Water		Bilge pump failed causing boat to sink in its slip
2/28/2001	Sandpoint	Pipeline	Natural Phenomenon	Natural Gas	Air		Snow fell off roof of condo onto natural gas pipeline, causing damage to pipeline and fire in condo
5/1/2002	Clark Fork	Fixed	Equipment Failure	Biodegradable Mineral Oil	Water	Avista Utilities	Material released out of hydro dam head gate due to a ruptured hydraulic line
5/10/2002	Sagle	Unknown Sheen	Dumping	Unknown Oil	Water		Unknown sheen
7/12/2002	Sandpoint	Fixed	Unknown	Gasoline	Water		Release from vessel fueling area
9/3/2002	Sandpoint	Fixed	Dumping	Motor Oil	Land		Oil dumped on gravel driveway
10/31/2002	Lakeview	Fixed	Unknown	Diesel	Water	C.E. Kramer Crane & Contracting	Potential release of diesel from fuel tank on crane due to broken barge
8/3/2003	Sandpoint	Vessel	Natural Phenomenon	Gasoline	Water		Boat sunk due to the weather conditions
7/3/2004	Priest Lake	Vessel	Vessel Sinking	Gasoline & Unknown Oil	Water		Boat sank causing release of an unknown amount of oil and gas into water
9/14/2005	Oldtown	Storage Tank	Operator Error	Hydraulic Oil	Water	GTE	Material release from hose attached to a hydraulic oil tank
8/23/2006	Oldtown	Unknown Sheen	Unknown	Unknown Oil	Water		Unknown sheen on river from unknown source
10/3/2006	Hope	Vessel	Vessel Sinking	Oil, Fuel: No. 1-D	Water	Kramer's Marina	Tug vessel sunk at marina releasing materials into water
1/15/2008	Oldtown	Mobile	Other	Grease	Water	US Army COE	Discharge of grease from a crane
2/6/2008	Sagle	Vessel	Vessel Sinking	Diesel	Non-Release		Release of diesel from a sunken vessel
3/22/2008	Sagle	Vessel	Vessel Sinking	Unknown Oil & Gasoline	Water		Pleasure craft sunk at marina releasing materials into water
3/31/2008	Sandpoint	Pipeline	Unknown	Fire Debris	Air		Structure fire involving material release from a plastic pipeline

Source: National Response Center, 2008 (<http://www.nrc.uscg.mil/nrchp.html>)

The Idaho Health and Welfare Department maintains a list of clandestine methamphetamine drug laboratory sites. **Table 3-14** lists the drug lab site in Bonner County, many of which have required hazardous material responses. An article from the local newspaper reports on a drug lab response in the City of Hope that took place in 2006.

TABLE 3-14 CLANDESTINE METHAMPHETAMINE LABORATORY SITES IN BONNER COUNTY		
Year/Month	Address	City
November, 2007	1305 Hidden Valley Road	Blanchard
March, 2007	1540 Old Priest Road	Priest River
October, 2007	590 Skyhawk Drive	Spirit Lake
November, 2007	3972 Gold Creek Road	Sandpoint
November, 2007	Al's Welding Road	Spirit Lake
December 2008	781 Edgemere Cutoff Rd.	Priest River

Source: Idaho Department of Health and Welfare, 2009

<http://www.healthandwelfare.idaho.gov/DesktopModules/DocumentsSortable/DocumentsSrtView.aspx?tabID=0&ItemID=4629&MId=10572&wversion=Staging>

**March 12, 2006** - Two people were arrested after Bonner County Sheriff's deputies raided a suspected methamphetamine lab. Sheriff's deputies had been watching the home at 104 Highland Ave., according to court documents. Deputies, firefighters from the Sam Owen Fire District and East Hope Fire Department, and officials from the Panhandle Regional Hazardous Materials Response Team removed the toxic chemicals used to make the drug. The hazardous materials were taken away by a cleanup company from Spokane, Washington (Two Jailed after Drug Lab Raid in Hope, Bonner County Daily Bee).

### ***Probability of Future Events***

The history of hazardous material incidents in Bonner County over the past 20 years indicates they occur more than once per year; however, none of these have resulted in a disaster declaration. Due to the existence of federal and state highways and active railroad lines within close proximity to critical facilities, the probability of a future hazardous material incident in Bonner County is rated as "common".

## Landslides

### *Hazard Description*

A landslide is the movement of a soil and/or rock mass down a slope. Any area composed of very weak or fractured materials resting on a steep slope can and likely will experience landslides. Landslides, or debris flows, are often difficult to distinguish from flash floods and possess similar destructive potential and rapid onset. Debris flows generally occur during periods of intense rain fall or rapid snowmelt. They usually start on steep hillsides as shallow slides that liquefy and accelerate. The consistency of debris flow range from watery mud to thick, rocky mud that can carry large items such as boulders, trees and cars. When the flow reaches flatter ground, debris can spread over a broad area, sometimes accumulating in thick deposits.

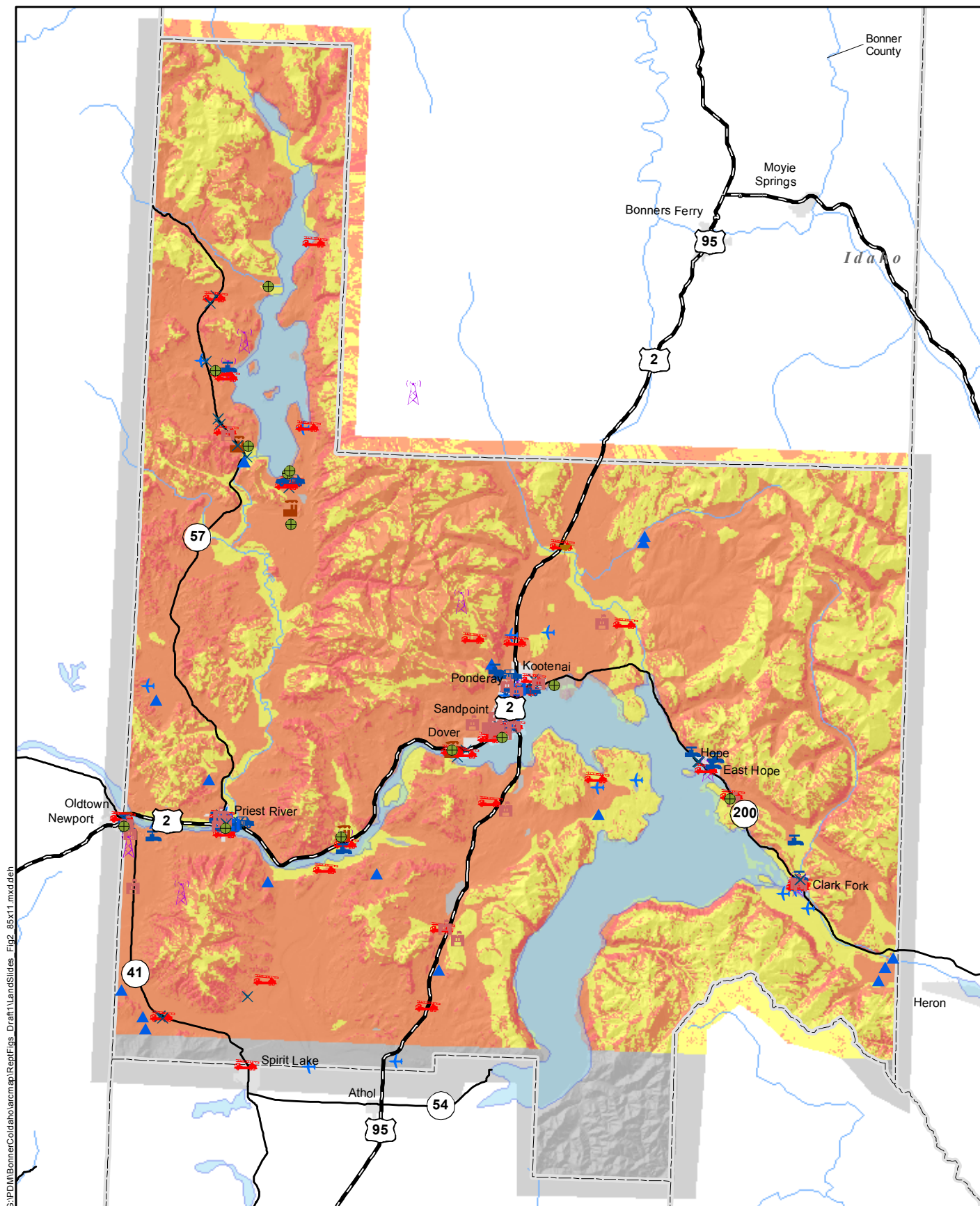
According to the Bonner County Emergency Operations Plan (2004), landslides often occur in conjunction with other types of natural disasters, such as earthquakes, floods and volcanic eruptions. Evidence of landslide activity is apparent on many of the roadways and cliff faces in Bonner County. Consequences of landslide in Idaho generally occur directly at the site and down slope of the slide area, and in adjacent waterways. Temporary road closures and lengthy detours while debris is being cleared are the most likely difficulties. **Figure 2** presents a map showing landslide potential in Bonner County. **Appendix D** contains detailed maps showing the landslide risk and the location of Bonner County's critical facilities. Data for this figure was created by the Idaho Department of Lands using criteria in the "Forest Practices, Cumulative Watershed Effects, Process for Idaho" (2000) manual. The rating system criteria is based on an intersected geology, soil and slope layer to create high, medium and low Cumulative Watershed Effects ratings.

Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management standards can reduce landslide hazards. <http://earthquake.usgs.gov/regional/neic/>

### *Location and Extent of Previous Hazard Events*

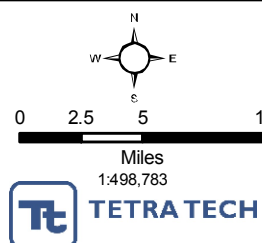
There have been no repetitive losses in Bonner County associated with the Landslide hazard. Records of landslide events in Bonner County are summarized below.

**April, 1991** - The damaging event that occurred near Sandpoint in April 1991 was classified in a State Disaster Declaration as a flash flood but the high debris load makes it somewhat indistinguishable from a debris flow. The torrents blew out large sections of the road leading to the Schweitzer Basin Ski Area stranding dozens of people, contaminated the city's primary water supply, and heavily damaged the water treatment facility. The cost to cleanout and repair the water treatment facility ran to several hundred thousand dollars (IBHS, 2007).



February, 2009

**Figure 2**  
**Bonner County, Idaho**  
**Landslide Hazard**  
**Bonner County**  
**All Hazard Mitigation Plan**



— State Highway  
 — U.S. Highway  
 — County Boundary

— Lake / Pond  
 — River / Stream  
 — Municipality

**Landslide Potential**  
 High  
 Medium  
 Low  
 None or Unknown

**March, 1997** - In early March, Northern Idaho received 12 to 18 inches of snow on top of an existing snow pack that exceeded 150-170 percent of average. A rainstorm followed which resulted in a rapid snow melt. The resulting mudslides and flooding lasted for an extended period and damaged many public facilities including county road systems. The President issued Federal Disaster Declaration IDR-1177 on June 13, 1997 for Bonner and several other counties (IBHS, 2007).

### ***Probability of Future Events***

Based on the history of landslides in Bonner County which have received disaster declarations, the probability for a future event is rated as “frequent” and is likely to occur more than once per decade but not every year.

### ***Past Landslide Mitigation Projects***

Landslide mitigation/repair projects that have been completed in Bonner County over the ten year period 1999 – 2008 are shown in **Table 3-15**.

<b>TABLE 3-15 LANDSLIDE MITIGATION COMPLETED IN BONNER COUNTY; 1999-2008</b>		
<b>District</b>	<b>Road Name</b>	<b>Repair/Mitigation</b>
1	Talache Road	Rebuilt shoulder and installed armoring along slope
1	Kelso Lake Road	Replaced material in road that slid and installed plantings along slope above Granite Lake
2	E. River Road	Removed clay materials, replaced with structural fill keyed into slope, moved road away from slide area and armored slope with rock
2	Old Priest River Road	Installed horizontal drains, rebuilt shoulder and installed armoring along slope at Cedar Lane
2	Wrenco Loop	General slide work repairs
2	Bear Paw Road	General slide work repairs
2	Dufort Road	Ongoing shoulder repairs
3	W. Shingle Mill Road	Purchased additional right-of-way and moved road away from slide area
3	Trestle Creek Road	Rebuilt shoulder and installed armoring along slope
3	Johnson Creek Road	Rebuilt shoulder and installed armoring along slope
3	E. Spring Creek Road	Installed ecology blocks along base of slide area
3	Sunnyside Road	Removed slide material from saturated slope above and stabilized bank

Source: Ryan Luttmann, Bonner County Road and Bridge

## Railroad Accidents

### *Hazard Description*

Rail lines through Bonner County are described in the Transportation Component of the Bonner County Comprehensive Plan (Bonner County Planning Department, 2002). The Washington Division of the Burlington Northern-Santa Fe line (BNSF) extends 50 miles through Bonner County from Athol to Elmira, and north to the county line. There are two junctions in Bonner County; one in Sandpoint and one in Dover. In addition, BNSF operates the Montana Rail Link Railroad which handles freight between Kootenai, Idaho and Butte, Montana. This line enters Bonner County on the west near Oldtown and travels east exiting into Montana, running a total of 80 miles through the county. Both lines are used to ship lumber, petroleum potash, and other products. Approximately three to seven trains travel through Bonner County each day.

The Spokane International (Union Pacific) line passes through Sandpoint. The railroad is a line between Spokane, Washington and a connection with the Canadian Pacific Railroad southwest of Cranbrook, British Columbia and runs through Bonner County for 66 miles. This line is used to ship lumber, potash, and petroleum. Information is not available on the number of Union Pacific trains that travel through the county each day.

The Port of Pend Oreille operates freight train service in Bonner County between Oldtown and Sandpoint. The Pend Oreille Valley Authority is based in Usk, Washington. The freight train travels over the existing BNSF lines located on the north side of the Pend Oreille River in Bonner County. The Oldtown to Sandpoint route is approximately 30 miles and one freight train runs daily in and out of Bonner County.

Amtrak's Empire Builder passenger train serves Sandpoint on a daily basis. Two trains travel daily between Chicago and Seattle/Portland, passing through Bonner County.

There are approximately 162 rail crossings in Bonner County. These gated and ungated crossings include private, public, grade separated and at-grade crossings. According to the NTSB, more than 80 percent of public railroad crossings do not have lights and gates, and 60 percent of all railroad accidents occur at these unprotected crossings.

### *Location and Extent of Previous Hazard Events*

**Table 3-16** displays the statistics on railroad accidents at highway crossings in Bonner County, as reported by the Federal Railroad Administration. The statistics show that for the 31 year period of record (1976 through 2006), 216 railroad accidents have occurred at Bonner County highway crossings which have caused 22 fatalities and 33 injuries. There have been no repetitive losses to Bonner County infrastructure associated with the Railroad Accident hazard. Following the table is an account of a railroad accident from the local newspaper.

TABLE 3-16 RAILROAD ACCIDENTS AT HIGHWAY CROSSINGS IN BONNER COUNTY							
Year	Accidents	Fatalities	Injuries	Year	Accidents	Fatalities	Injuries
1976	5	-	1	1992	10	1	1
1977	2	-	-	1993	4	-	1
1978	7	-	-	1994	9	2	-
1979	5	-	1	1995	6	-	1
1980	4	-	-	1996	4	1	2
1981	10	-	1	1997	5	-	1
1982	4	-	-	1998	5	-	5
1983	6	3	1	1999	2	-	1
1984	5	-	2	2000	6	6	-
1985	3	-	-	2001	3	-	3
1986	2	2	1	2002	3	-	-
1987	5	1	2	2003	1	-	1
1988	8	-	-	2004	2	-	1
1989	3	1	-	2005	No data		
1990	6	3	-	2006	2	-	-
1991	11	2	7	2007	1	-	-
				TOTAL	149	22	33

Source: Federal Railroad Administration, 2008 (<http://safetydata.fra.dot.gov>)

**April 19, 2006** - BNSF officials launched an investigation following a train accident that derailed 13 cars in northern Bonner County, causing them to spill 105 loads of wheat along the railway tracks near US-95. No one was injured in the derailment that occurred at 11:30 p.m. north of Elmira. Traffic was slowed along US-95, as a crew of about 35 worked throughout the night and next day attempting to push 11 toppled cars to the side of the tracks. Heavy equipment -- including several bulldozers with side booms and excavators -- from Sandpoint, Bonners Ferry and Pasco, Washington were called in to help facilitate the cleanup work. BNSF's 105-car train, originating in Wolf Point, Montana, was en route to Kalama, Washington when the derailment occurred near the Bonner/Boundary county line. No hazardous materials were on board the train that was going 22 mph in the 50 mph zone. The Boundary County Sheriff's Office was advised by train officials it could take up to 18 hours to clear the scene (*Train Derailment Scatters Wheat Near Elmira*, Bonner County Daily Bee).

**October 19, 2004** - A BNSF locomotive collided with a stalled Ford Bronco at an at-grade crossing. The driver of the Bronco, was able to exit the vehicle before the train reached the crossing, but he was unable to move his rig out of harm's way. The collision happened at about 8:25 a.m. at the Bailey Road crossing. The vehicle was totaled and the train sustained \$2,000 in damage. State police said the collision propelled the Bronco down a 120-foot embankment and into a nearby stream. About 15 gallons of fuel leaked from the truck. The spill was contained by Northside firefighters. The No. 8032 train consisted of four engines pulling 81 cars and two

crew members. The accident tied up the tracks for about two hours. (*Train Rams Stalled Bronco at Crossing*, Bonner County Daily Bee).

### ***Probability of Future Events***

Since 1976, 149 railroad accidents have occurred resulting in 22 fatalities and 33 injuries. Using this historical data, five railroad accidents occur on the average each year. In the past 20 years, only four railroad accidents have released hazardous materials, three of which were relatively minor. Although the probability of railroad accidents occurring in the future is rated as “common” in Bonner County, the likelihood of a significant event resulting in a disaster declaration is considered low.

## Severe Thunderstorms, Wind, and Hail

### *Hazard Description*

A windstorm is generally a short duration event involving straight-line wind and/or gusts in excess of 58 mph. Windstorms affect areas with significant tree stands, as well as areas with exposed property, major infrastructure, and aboveground utility lines. Thunderstorms can produce intense downburst and microburst wind.

According to the Bonner County Emergency Operations Plan (2004), strong winds are common to the county. When combined with blowing dirt or snow, the winds cause a threat to traffic and can damage homes, businesses, crops and utilities.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including severe wind. The NWS's Warning and Advisory Criteria for wind is presented in **Table 3-17**.

TABLE 3-17 WARNING AND ADVISORY CRITERIA FOR SEVERE WIND		
Weather Event	Criteria	
Severe Thunderstorm Warning	Any thunderstorm wind gust equal to or greater than 58 mph; any hail size $\frac{3}{4}$ inch or larger.	
Weather Event	Non-Precipitation Advisory	Non-Precipitation Warning
High Wind	None	Sustained winds of 40 mph for an hour or any gust to 58 mph (non-convective winds).

Source: National Weather Service

Hailstorms develop from severe thunderstorms. Nationally, hailstorms cause nearly \$1 billion in property and crop damage annually, as peak activity coincides with peak agricultural seasons. Severe hailstorms also cause considerable damage to buildings and automobiles, but rarely result in loss of life.

### *Location and Extent of Previous Hazard Events*

Numerous windstorms have affected the Idaho Panhandle and impacted Bonner County residents. However, there have been no repetitive losses in Bonner County associated with the Severe Wind and Hail hazard. **Table 3-18** presents windstorm listings from the NCDC and SHELDS databases.

**TABLE 3-18**  
**THUNDERSTORM, WIND, HAIL EVENTS IN BONNER COUNTY**

Location	Date	Type	Magnitude	Property Damage	Crop Damage	Source
September 3, 1960	Bonner County	Lightning, Wind	-	\$1,136	-	SHELDUS
April 19, 1962	Bonner County	Wind	-	\$114	\$114	SHELDUS
November 19, 1962	Bonner County	Wind	-	\$10,000	-	SHELDUS
July 8, 1964	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
July 8, 1965	Bonner County	Hail./Thunder storm	-	-	\$1,136	SHELDUS
August 13, 1966	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
August 10, 1968	Bonner County	Thunder Storm	-	-	\$11,364	SHELDUS
July 16, 1970	Bonner County	Hail, Lightning, Wind	-	\$278	\$27,778	SHELDUS
July 14, 1975	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
May 10, 1976	Bonner County	Thunderstorm/Wind	-	\$7,143	-	SHELDUS
August 6, 1976	Bonner County	Lightning/Wind	-	\$166,667	-	SHELDUS
August 6, 1976	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
August 13, 1977	Bonner County	Lightning	-	\$16,667	-	SHELDUS
November 4, 1978	Bonner County	Wind	-	\$12,500	-	SHELDUS
July 5, 1979	Bonner County	Lightning/Wind	-	\$16,667	-	SHELDUS
July 5, 1979	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
July 8, 1980	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
November 13, 1981	Bonner County	Wind	-	\$55,556	-	SHELDUS
July 24, 1983	Bonner County	Hail, Wind	-	\$16,667	\$1,666,667	SHELDUS
July 24, 1983	Bonner County	Hail	1¾ inch hail	-	-	NCDC
July 24, 1983	Bonner County	Hail	1¾ inch hail	-	-	NCDC
July 24, 1983	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
July 24, 1983	Bonner County	Thunderstorm/Wind	52 knots	-	-	NCDC
April 23, 1985	Bonner County	Wind	-	\$7,143	-	SHELDUS
June 15, 1987	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
December 9, 1987	Bonner County	Wind	-	\$7,143	-	SHELDUS
June 27, 1988	Bonner County	Lightning	-	\$50,000	-	SHELDUS
December 12, 1988	Bonner County	Wind	-	\$10,000	-	SHELDUS
August 12, 1989	Bonner County	Thunderstorm/Wind	-	\$50,000	-	SHELDUS
August 12, 1989	Bonner County	Thunderstorm/Wind	65 knots	-	-	NCDC
November 23, 1990	Bonner County	Wind	-	\$100,000	-	SHELDUS
December 4, 1990	Bonner County	Wind	-	\$6,250	-	SHELDUS
March 3, 1991	Bonner County	Wind	-	\$1,136	-	SHELDUS
April 9, 1991	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
April 9, 1991	Bonner County	Thunderstorm/Wind	-	\$50,000	-	SHELDUS
September 13, 1991	Bonner County	Thunderstorm/Wind	-	-	-	NCDC
October 16, 1991	Bonner County	Wind	-	\$71,429	\$7,143	SHELDUS
April 9, 1992	Bonner County	Wind	-	\$1,724	-	SHELDUS
April 17, 1992	Bonner County	Wind	-	\$11,364	\$11,364	SHELDUS
August 11, 1992	Bonner County	Lightning	-	\$1,136	\$114	SHELDUS
May 15, 1994	Bonner County	Wind	-	\$16,667	-	SHELDUS
June 13, 1994	Bonner County	Thunderstorm/Wind	-	\$50,000	-	NCDC
November 1, 1994	Bonner County	Wind	-	\$5,000	-	SHELDUS

**TABLE 3-18**  
**THUNDERSTORM, WIND, HAIL EVENTS IN BONNER COUNTY**

Location	Date	Type	Magnitude	Property Damage	Crop Damage	Source
November 1, 1994	Bonner County	Lightning		\$50,000	-	NCDC
September 7, 1995	Priest River	Lightning	-	\$5,000	-	NCDC
May 14, 1996	Priest River	Heavy Rain	-	-	-	NCDC
May 31, 1997	Cocolalla	Heavy Rain	-	-	-	NCDC
May 31, 1997	Oldtown	Thunderstorm/Wind	60 knots	\$10,000	-	NCDC
May 31, 1997	Priest River	Thunderstorm/Wind	60 knots	\$125,000	-	NCDC
May 31, 1997	Sagle	Thunderstorm/Wind	60 knots	\$85,000	-	NCDC
May 31, 1997	Sandpoint	Thunderstorm/Wind	60 knots	\$90,000	-	NCDC
May 31, 1997	Bonner County	Thunderstorm/Wind	-	\$310,000	-	SHELDUS
June 17, 1997	Priest River	Hail	¾ inch hail	-	-	NCDC
June 17, 1997	Sandpoint	Thunderstorm/Wind and Hail	½ inch hail	-	-	NCDC
June 15, 1998	Oldtown	Hail	1 inch hail	-	-	NCDC
June 15, 1998	Sandpoint	Hail	¾ inch hail	-	-	NCDC
August 24, 2000	Coolin - 5 Miles S	Hail	1 inch hail	-	-	NCDC
August 30, 2000	Oldtown - 1 Mile N	Lightning	-	-	-	NCDC
March 13, 2001	Bonner County	Wind	-	\$2,333	-	SHELDUS
August 30, 2002	Bonner County	Lightning	-	-	-	SHELDUS
June 10, 2003	Oldtown	Hail	1 inch hail	-	-	NCDC
June 10, 2003	Priest River	Hail	7/8 inch hail	-	-	NCDC
June 10, 2003	Sandpoint - 5 Miles S	Hail	¾ inch hail	-	-	NCDC
June 10, 2003	Sandpoint	Thunderstorm/Wind	60 knots	-	-	NCDC
November 19, 2003	Bonner County	Wind		\$50,000	-	SHELDUS
June 25, 2004	Bonner County	Thunderstorm/Wind		\$25,000	-	SHELDUS
June 25, 2004	Coolin	Hail	7/8 inch hail	-	-	NCDC
June 25, 2004	Sandpoint	Thunderstorm/Wind	60 knots	\$25,000	-	NCDC
May 22, 2006	Sandpoint	Thunderstorm/Wind	50 knots	\$53,000	-	NCDC
June 2, 2006	Priest River - 1 Mile S	Thunderstorm/Wind	52 knots	-	-	NCDC
July 10, 2006	Coolin - 10 Miles N	Hail	1 inch hail	-	-	NCDC
August 10, 2006	Cabinet	Hail	¾ inch hail	-	-	NCDC
August 10, 2006	Coolin - 8 miles NNW	Hail	¾ inch hail	-	-	NCDC
August 10, 2006	Coolin - 12 miles N	Thunderstorm/Wind	50 knots	-	-	NCDC
June 29, 2007	Blanchard	Thunderstorm/Wind	-	\$54,000	-	NCDC
June 29, 2007	Coolin	Thunderstorm/Wind	-	\$200,000	-	NCDC
June 29, 2007	Sandpoint - 3 Miles S	Thunderstorm/Wind	-	\$220,000	-	NCDC
August 31, 2007	Kootenai	Thunderstorm/Wind	-	\$2,000	-	NCDC
August 31, 2007	Sandpoint - 3 Miles S	Thunderstorm/Wind	-	\$2,000	-	NCDC

A brief synopsis of some of the severe thunderstorm, wind, and hail events in Bonner County, as chronicled by local newspapers and the NCDC is presented below.

**June 13, 1994** - Strong thunderstorm winds toppled several trees and destroyed a large workshop near Sagle. Downed power lines in the area resulted in local power outages (NCDC Storm Events database).

**August 24, 2000** - An upper level disturbance lifted north across the northwest. Thunderstorms initially fired off near the center of this feature over northeast Washington. One storm then moved east into northwest Bonner County, strengthening quickly for a short time and dropping large hail. The main threat from this storm was damaging wind as it tracked across the county, though marginally severe hail was also reported with this storm (NCDC Storm Events database).

**June 10, 2003** - During the afternoon of June 10th a cluster of thunderstorms formed over northern Idaho. Spotters in Bonner and Kootenai Counties reported hail diameters ranging from 3/4 of an inch to one inch. Gusty downburst winds also accompanied some of these storms with a report of a tree being blown down near Sandpoint and power lines downed near Priest River (NCDC Storm Events database).

**June 25, 2004** - A severe thunderstorm developed over northern Bonner County and brought damaging winds and hail to 7/8 inch in diameter in a path from Coolin to Sandpoint. In Sandpoint a tree was blown down onto a house (NCDC Storm Events database).

**May 22, 2006** - Scattered thunderstorms led to severe weather over portions of north central Idaho. Trees and power lines were knocked down from Sandpoint to Kootenai, as well as the north side of the county. The winds blew one dock near Sandpoint about 20 feet to the north causing the walkway to collapse. In Samuels, pieces of a roof fell behind a barn, with part of the structure falling on a recreational vehicle that was parked inside (NCDC Storm Events database).

**December 15, 2006** – Windstorms pummeled Harbor Marina, shirting a breakwater, pushing docks into one another and trapping several boats. Residents say winds reached 80 miles per hour in the bay, knocking out power for more than 24 hours and cutting phone lines (*Harbor Marina Finds Repairs on Slow Track*, Bonner County Daily Bee, January 12, 2007).



**June 29, 2007** - A line of severe thunderstorms tracked through north Idaho causing extensive damage. Numerous trees were blown down with power outages common due to winds between 60-70 mph. Over 100 power poles had to be replaced, including at least 70 that snapped near Priest Lake. At least 15,000 homes in Kootenai, Bonner, and Boundary counties lost power. Trees fell onto several homes, cars, and roadways, including Highway 95 which was blocked between Bonners Ferry and Sandpoint. The Army National Guard responded to provide additional aid to emergency personnel (NCDC Storm Events database).

### ***Probability of Future Events***

The history of thunderstorm, wind and hail events in Bonner County shows that they occur with more than once per year. Therefore, the probability of this hazard occurring in the future is rated as “common”.

## **Terrorism, Civil Unrest, and Violence**

### ***Hazard Description***

Terrorism, civil unrest, and violence are human-caused hazards that are intentional and often planned. Terrorism, both domestic and international, is a violent act done to try and influence government or the population of some political or social objective. Terrorist acts can come in many recognized forms or may be more subtle using nontraditional methods. The primary recognized forms of terrorism are chemical, explosive, biological, radiological, and cyber.

Civil unrest and violence typically occur on a smaller scale when large groups, organizations, or distraught individuals take action with potentially disastrous or disruptive results. Civil unrest can be the product of another event that creates panic in the community. Violence can be small scale, such as domestic violence, or larger and require significant government response.

According to the Bonner County Emergency Operations Plan (2004), local targets of terrorists might include transportation companies or facilities that store, generate, utilize or manufacture hazardous materials. Nitrate fertilizers are used extensively throughout the farming community of North Idaho and may attract criminal notice.

Of the 16,787 total households in Bonner County in 2005, 71.3 percent owned at least one firearm and the average numbered 5.16 firearms per household. The average number of firearms per household in Idaho is 3.52 firearms.

[http://www.isp.state.id.us/pgr/Research/documents/icvs2005\\_final\\_000.pdf](http://www.isp.state.id.us/pgr/Research/documents/icvs2005_final_000.pdf)

### ***Location and Extent of Previous Hazard Events***

Although there have been no repetitive losses in Bonner County associated with the Terrorism, Civil Unrest and Violence hazard, Northern Idaho has traditionally attracted activist/extremist individuals and groups. For more than 20 years, northern Idaho has been synonymous with hate groups, and the general area has been considered a haven for assorted extremists. Racist, anti-Semitic and technophobic extremists began appearing in the region in the 1970s, drawn by the overwhelmingly white population and a general to-each-his-own attitude that brought minimal opposition to the groups. Names like Randy Weaver, the Aryan Nations, the Phineas Priesthood and the 11th Hour Remnant Messenger dominated the national image of the region.

The ascendancy of the Aryan Nation in northern Idaho began when Richard Butler moved there in the early 1970s, looking to establish a white homeland. Eventually, the group began staging neo-Nazi gatherings and exporting violence from its compound about 10 miles north of Hayden Lake. The infamous 1992 shootout at Ruby Ridge that killed a deputy U.S. marshal and the wife and son of Randy Weaver, a white separatist but not a member of the Aryan Nation, focused national attention on members of the radical fringe living in the northern Idaho. The group went

bankrupt in 2000 by a civil rights lawsuit argued by the Southern Poverty Law Center. The lawsuit forced the group to sell their 20-acre compound, and new leaders subsequently moved the group's headquarters to Pennsylvania.

In 1996, there were a series of bombings and bank robberies by members of the Phineas Priesthood, a sect that holds religious beliefs against banking, abortion and a strong central government. The Phineas Priesthood does not exist as an organization or formal group, but a number of individual extremists have identified themselves as Phineas Priests, often as a way to justify criminal acts they committed earlier. Men who identified themselves as Phineas Priest, all from the Sandpoint area, bombed a newspaper office and Planned Parenthood clinic and robbed two banks in the Spokane area before they were captured and sent to prison.

The 11th Hour Remnant Messenger, founded by two wealthy Californians after they moved to Sandpoint, for a time sent unsolicited mass mailings of anti-Semitic and racist brochures and videos to every home in Bonner County and to others around the nation. This group has reportedly left northern Idaho.

[http://www.rickross.com/reference/hate\\_groups/hategroups336.html](http://www.rickross.com/reference/hate_groups/hategroups336.html).

**July 29, 2004** – A bomb threat made at a California Coldwater Creek retail store proved unfounded, but not before Bonner County emergency responders converged upon Coldwater Creek headquarters in Kootenai to assess the threat. After the threat was discovered, Coldwater Creek officials called local authorities and alerted the FBI to the threat. Shortly thereafter, Bonner County Sheriff's deputies, Ponderay Police and Northside Fire District officials arrived at the scene. Officials determined the threat was not to the Kootenai site. Coldwater Creek determined a few hours later that the bomb threat had been made in Sacramento (*Bomb Threat Made at One of Coldwater Creek's Stores*, Bonner County Daily Bee).

### ***Probability of Future Events***

Due to the history of past events in Northern Idaho, the probability of future terrorism events is rated as "infrequent". These types of events are not expected to occur more than once per decade.

## Tornados

### *Hazard Description*

Tornados are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating wind and strong vertical motion, which possess remarkable strength and can cause widespread damage. The most violent tornados are capable of tremendous destruction with wind speeds of 300 mph or more. Maximum wind speeds in tornados are confined to small areas and vary over short distances. Tornados are most common in the Great Plains, and are more infrequent and generally small west of the Rocky Mountains. Thunderstorms can produce deadly and damaging tornados.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including tornado warnings. The NWS's Warning and Advisory Criteria for tornados is presented in **Table 3-19**.

<b>TABLE 3-19</b>	
<b>WARNING AND ADVISORY CRITERIA FOR TORNADOS</b>	
<b>Weather Event</b>	<b>Criteria</b>
Tornado Warning	A violently, rotating column of air extending from the base of a thunderstorm to the ground.

Source: National Weather Service

The Fujita Tornado Scale is used by the NWS to estimate wind speeds within tornados based upon damage to buildings and structures. Tornados are assigned a rating of F0 to F12 on the Fujita Scale. The Enhanced Fujita (EF) Scale was implemented in place of the Fujita scale and began operational use on February 1, 2007. A comparison of the Fujita and EF scales and wind speeds are summarized in **Table 3-20**. The EF scale has six categories from zero to five representing increasing degrees of damage. It was revised to reflect better align wind speeds more closely with associated storm damage. It also adds more types of structures as well as vegetation, expands degrees of damage, and better accounts for variables such as differences in construction quality. The EF-scale is a set of wind estimates based on damage. It uses three-second estimated gusts at the point of damage. These estimates vary with height and exposure. Forensic meteorologist use 28 damage indicators and up to 9 degrees of damage to assign estimated speeds to the wind gusts.

TABLE 3-20 COMPARISON OF FUJITA AND ENHANCED FUJITA TORNADO SCALE					
Fujita Scale			Enhanced Fujita (EF) Scale		
Scale	Wind Speed (mph)	Typical Damage	Scale	3-Second Gust Speed (mph)	Typical Damage
F0	<73	Light Damage - Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.	EF0	66-85	Light Damage – Causes some damage to siding and shingles.
F1	73-112	Moderate Damage - Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.	EF1	86-110	Moderate Damage – Considerable roof damage. Winds can uproot trees and overturn single-wide mobile homes. Flagpoles bend.
F2	113-157	Considerable Damage - Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.	EF2	111-135	Considerable Damage – Most single-wide mobile homes destroyed. Permanent homes can shift off foundations. Flagpoles collapse. Softwood trees debarked.
F3	158-206	Severe Damage - Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.	EF3	136-165	Severe Damage – Hardwood trees debarked. All but small portions of houses destroyed.
F4	207-260	Devastating Damage - Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.	EF4	166-200	Devastating damage – Complete destruction of well-built residences, and large sections of school buildings.
F5	261-318	Incredible Damage - Strong frame houses lifted off foundations and swept away; automobile sized missiles fly through the air in excess of 100 meters.	EF5	>200	Incredible Damage – Significant structural deformation of mid- and High-rise buildings.

Source: NOAA-Storm Prediction Center, 2008

### ***Location and Extent of Previous Hazard Events***

Tornadoes in Idaho usually occur from March to October, with the majority occurring in June. The majority also occurs during the afternoon between 12:00 and 6:00 p.m. Most Idaho tornadoes have winds less than 113 miles an hour. A few have had winds up to 130 miles an hour. Bonner County experiences tornadoes occasionally, many of which have produced significant damage. However, there have been no repetitive losses in Bonner County associated with the Tornado hazard. **Table 3-21** presents tornado listings from the NCDC Storm Events Database.

TABLE 3-21 BONNER COUNTY TORNADO EVENTS				
Date	Location	Magnitude	Property Damage	Source
August 19, 1978	Bonner County	F1	\$25,000	NWS
April 9, 1991	Bonner County	F2	\$250,000	NWS, SHELDUS
May 29, 1994	Bonner County	F1	-	NWS
June 25, 2004	Coolin - 2 Miles N	F0	\$100,000	NWS, SHELDUS

A brief synopsis of some of tornado events in Bonner County is presented below.

**May 29, 1994** - Thunderstorms in northern Idaho produced heavy rains, small hail, and a short-lived tornado. The tornado touched down just south of Priest Lake, along State Highway 57. National Weather Service personnel investigated the damaged area, and determined the event to be a small F1 tornado. The tornado touched down in a sparsely populated area, and produced no significant damage. It did, however, uproot about 15 trees. Several of these trees ranged from 20 to 30 inches in diameter (NCDC Storm Events database).

**June 25, 2004** - A severe thunderstorm over Bonner County during the evening of June 25th produced a tornado. The tornado formed over Priest Lake about two miles north of Coolin. The tornado moved onshore and passed through the town of Coolin before dissipating south of the town. Eight homes and businesses in the town of Coolin were damaged and the roof of a fire station was peeled off as the tornado passed through the town (NCDC Storm Events database).

### ***Probability of Future Events***

According to FEMA, the project area has a single classification for tornado frequency (<1 per 1,000 square miles). Based on past events, the probability that a damaging tornado will impact Bonner County is rated as "infrequent". Therefore, it is not likely that these events will occur more than once per decade.

## Utility Outage

### ***Hazard Description***

Power failures can be caused by almost any natural or man-made hazard, but they can also occur because of human error or equipment failures. Electric, gas, telephone, and water are all important services that could become problematic should a long-term outage occur. Electricity is used to power many homes in Bonner County, to pump wells, and run heating systems, even if electricity is not the primary fuel source. Therefore, when electricity is lost for a long period of time, many residents could be without heat, water, and other appliances. Vulnerable populations needing powered medical equipment would be additionally threatened by a long-term power outage. Natural gas is used as a heat source for many residents in Bonner County. Should that utility be lost in the winter months, concerns associated with extended cold could be significant. Telephone services are most critical for 911 communications, and the rapid dispatch of needed emergency services. Many of the larger communities in Bonner County have public water supplies. Should those services be lost, many citizens would be without water and possibly sewer services. Any of these disruptions can be handled in a short time frame, but are quickly problematic in long-term situations.

Power outages commonly affect Bonner County. Power poles and power lines are susceptible to harsh weather events and wildfires. Northern Lights and Avista Utilities are the primary energy companies that serve the area.

According to the Bonner County Emergency Operations Plan (2004), a long-term power outage could create havoc for the public. Homes, as well as congregate care are immediately impacted, as is industry and business. Crops and livestock can become threatened and communications hampered. This type of incident should be considered a major threat to the local communities.

### ***Location and Extent of Previous Hazard Events***

There have been no repetitive losses to Bonner County infrastructure associated with the Utility Outage hazard. Power outages are a secondary effect of other hazard events including severe thunderstorm winds, tornados, and winter storms. An example of typical power outages that have affected Bonner County, as presented in local newspaper accounts, are summarized below.

**June 23, 2005** – Wild, damaging winds with gusts of more than 70 mph delivered a knock-out punch as close to 3,000 Bonner County homes lost power. At the peak of the storm that toppled trees and power lines, Avista Utilities said 826 customers lost electricity in Sandpoint. About 2,000 Northern Lights customers in Bonner County also found themselves without power. (*Wild Winds Knock Out Power Again*, Bonner County Daily Bee).

**Mid-January, 2006** – Heavy snow and high winds knocked out power for 11,000 Avista customers in north Idaho and eastern Washington, including 3,000 customers in the Sandpoint/Sagle area. Heavy, wet snow toppled trees onto utility poles causing internal connection cracks to electrical lines that was responsible for the widespread failure (*Winter Storm Slams Region*, Bonner County Daily Bee; March 10, 2006).

**November 14, 2006** – A snow storm zipped and zagged through Bonner County and snapped power lines along the way. The storm knocked out power in eastern Washington, north Idaho and western Montana. Around 200 Northern Lights customers were without power. (*Outages Scattered in Bonner County*, Bonner County Daily Bee).

**December 16, 2006** – A wind storm which roared through north Idaho and eastern Washington made a mess of area utility systems, knocking out power to almost 60,000 people around the region. Northern Lights reported power outages to about 8,000 customers in north Idaho and western Montana. Avista Utilities said the storm knocked out service to more than 50,000 customers in the Spokane area, and Kootenai and Bonner counties, and caused extensive damage to the utility's infrastructure. The storm sent trees into power lines causing broken poles and wires throughout the Northern Lights service area. The storm wasn't just pulling down lines but pulling over poles. At the height of the storm, homes and businesses in areas of Laclede and Priest Lake were among those which lost power. The next day, about 19,000 Avista customers were still without power, included 362 in the Hope/Clark Fork area, about 100 customers in the Oldtown area and a few in the Sagle area. (*Windstorm Makes a Mess in Region*, Bonner County Daily Bee).

**January 11, 2007** – About 1,000 Avista customers in the Hope area were without power after a tree fell across two lines. About 14 Clark Fork area customers were without power because of downed pole had to be replaced. (*Windstorm Knocks Out Power, Drops Trees*, Bonner County Daily Bee).

**July 3, 2007** – A wind storm packing 60 to 70 mph winds left 15,000 customers in Bonner, Boundary and Kootenai counties without power. The storm tore a path that hit hard in Priest Lake with at least 70 broken poles. (*Residents Coping Following Storm's Wallop*, Bonner County Daily Bee).

### ***Probability of Future Events***

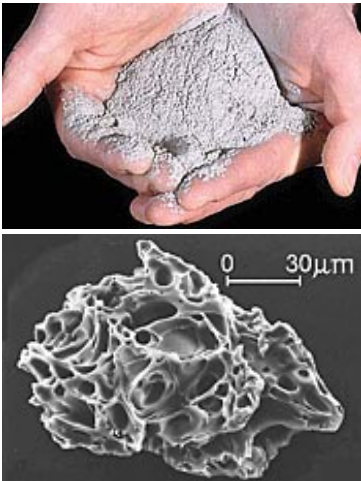
Utility outages occur more than once per year in Bonner County and usually occur as a secondary effect of severe winds and snowstorms. Since the majority of power lines are above ground and utility corridors are surrounded by forest, the probability of future utility outages is rated as "common".

## Volcanic Eruption

### Hazard Description

Volcanic eruptions are generally not a major concern in Bonner County due to the relatively low probability (compared with other hazards) of events in any given year. The two volcanic centers potentially affecting northern Idaho are: 1) the Cascade Range of Washington, Oregon and California; and 2) the Yellowstone Caldera in Wyoming and eastern Idaho. Volcanic eruptions in the Cascade Mountains are more likely to impact Bonner County than Yellowstone eruptions, based on the historic trends of past eruptions. The primary effect of the Cascade volcanic eruptions on Bonner County would be ashfall. The distribution of ash from a violent eruption is a function of the weather, particularly wind direction and speed and atmospheric stability, and the duration of the eruption. As the prevailing wind in the mid-latitudes of the northern hemisphere is generally from the west, ash is usually spread eastward from the volcano. Exceptions to this rule do, however, occur. Ashfall, because of its potential widespread distribution, offers some significant volcanic hazards, as described below

**Table 3-22 Effects of Volcanic Ash**

 <p>Volcanic ash, like this 1980 ash from Mount St. Helens, is made up of tiny jagged particles of rock and glass (photo on bottom magnified 200 times).</p>	<p>Short-circuits and failure of electronic components, especially high-voltage circuits and transformers (wet ash conducts electricity).</p> <p>Eruption clouds and ashfall commonly interrupt or prevent telephone and radio communications.</p> <p>Volcanic ash can cause internal-combustion engines to stall by clogging air filters and also damage the moving parts. Engines of jet aircraft have suddenly failed after flying through clouds of even thinly dispersed ash.</p> <p>Roads, highways, and airport runways can be made treacherous or impassable because ash is slippery and may reduce visibility to near zero. Cars driving faster than 5 miles per hour on ash-covered roads stir up thick clouds of ash, reducing visibility and causing accidents.</p> <p>Ash also clogs filters used in air-ventilation systems to the point that airflow often stops completely, causing equipment to overheat.</p> <p>Crop damage can range from negligible to severe, depending on the thickness of ash, type and maturity of plants, and timing of subsequent rainfall.</p> <p>Like airborne particles from dust storms, forest fires, and air pollution, volcanic ash poses a health risk, especially to children, the elderly, and people with cardiac or respiratory conditions, such as asthma, chronic bronchitis, and emphysema.</p>
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Source: USGS, 2003

***Location and Extent of Previous Hazard Events***

Bonner County has not experienced repetitive losses associated with the Volcanic Eruption hazard. The only significant volcanic event in Bonner County during recorded history was ashfall from the eruption of Mount St. Helens, as described below.

***May 18, 1980*** - Mount St. Helens in western Washington erupted, killing 57 and causing over one billion dollars of damage in the Northwest. The eruption followed two months of earthquakes and minor eruptions, and this warning allowed most people in the proximal hazard area to evacuate prior to the eruption. Ashfall from the eruption impacted northern Idaho, covering roads, affecting crops, machinery and vehicles, and creating health issues (IBHS, 2007). The damage resulted in a Federal Disaster Declaration that included Bonner County.

***Probability of Future Events***

The probability of future volcanic eruptions affecting Bonner County is rated as “infrequent” and is considered a rare event compared to other hazards.

## Wildfire

### *Hazard Description*

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires, be it man caused or natural in origin. Severe wildfire conditions have historically represented a threat of potential destruction within the region. Negative impacts of wildfire include loss of life, property and resource damage or destruction, severe emotional crisis, widespread economic impact, disrupted and fiscally impacted government services, and environmental degradation.

Idaho and other western states are experiencing forest health challenges primarily due to drought, insects, unusual warm temperatures, and past fire suppression activities. In Idaho, various bark beetles including the western pine beetle, mountain pine beetle, Douglas-fir beetle, and fir engraver are attacking large stands of trees. Because winter is no longer cold enough and long enough to keep these beetles in check, they survive to deplete the tree of nourishment and moisture throughout the year. Affected trees usually die within 2 or 3 years. Historically, the forests were open growth stands and resembled park like forests that could resist small ground fires that cleaned the forested areas of young trees and underbrush. Today, many of these older large trees are no longer on the landscape. In the absence of fire, young trees crowd the understory, often out competing the larger trees for available water. The result is a forest that is highly vulnerable to drought stress, insect and disease infestation and large stand-replacing fires. <http://www.idahoforests.org/buggin.htm>

Problems with wildfire occur when combined with the human environment. People and structures near wildfires are threatened unless adequately protected through evacuation or mitigation. Most structures are flammable, and therefore, are threatened when wildfire approaches. In addition, a significant loss of life could occur with residents who do not evacuate, firefighters, and others who are in the wildfire area. Infrastructure such as electric transmission lines, fuel tanks, and radio transmission towers are not often equipped to withstand the heat from a wildfire. Timber resources, animal habitats, and waterways can all be damaged leading to negative economic and environmental impacts. The area where human development meets undeveloped, vegetative lands is called the wildland urban interface (WUI). A WUI Fire Mitigation Plan was prepared for Bonner County in 2004 (Inland Forest Management, 2004). The WUI plan was last updated in 2008. **Appendix G** contains copies of both documents.

Bonner County has ten fire districts that provide fire protection for private homes and businesses within their respective districts.

- Clark Fork Fire District
- Coolin - Cavanaugh Bay Fire Protection District
- Northside Fire District
- Sagle Fire District

- Sam Owen Fire District
- Sandpoint Fire Department
- Schweitzer Fire/District
- Spirit Lake Fire District
- West Bonner Fire District
- West Pend Oreille Fire District
- West Priest Lake Fire Department
- Westside Fire District

The Idaho Department of Lands (IDL) is responsible for fire prevention and protection of state-owned lands within the county, and also responds to fires on private timber lands. IDL has two fire stations in Bonner County; one at Cavanaugh Bay at Priest Lake, and one station in the city of Sandpoint. Many of the incorporated jurisdictions also have city fire departments.

Currently, Bonner County has not adopted the International Fire Code in its entirety; however, it is up for future consideration.

### ***Location and Extent of Previous Hazard Events***

The history of wildfire in northern Idaho, as chronicled in the Bonner County WUI Fire Mitigation Plan (Inland Forest Management, 2004), is summarized below.

In 1910, three million acres of timberland burned in Montana, Washington and Northern Idaho. A large amount of timber burned in Bonner County during these fires. The Pend Oreille National Forest spent over \$45,000 in 1910 to control the fires of 1910.

In 1926, fires ravaged the northern part of Idaho with as many as 240 fires observed in the area now administered by the Priest Lake Ranger District of the Pend Oreille National Forest.

In 1967, the Kaniksu Mountain, Trapper Peak and Sundance fires consumed 73,000 acres. One of those burns, the Sundance Fire advanced 16 miles and burned 50,000 acres in nine hours on September 1, 1967. During the period of fastest spread, the fire burned at a rate of a square mile every three to six minutes and produced a smoke column that rose 35,000 feet into the air (Cork, in Bonner County Planning Department, 2002a). The SHELDS database indicates that property loss in Bonner County from these fires was \$2,255,455.



The front line of the Sundance Fire was six miles wide and consumed forestland at the rate of one square mile every six minutes.  
Photo courtesy BONNER COUNTY HISTORICAL SOCIETY & MUSEUM

In August 1998, a wildfire two miles north of Hope caused \$5,000 in property damage (NCDC and SHELDSUS databases).

In October 1991, high winds combined with dry conditions resulting in severe wildland interface fires in the Spokane and Coeur d'Alene areas. The fires were started by downed power lines and resulted in two deaths and over 100 homes damaged or destroyed. Several wildland fires occurred in Bonner County during the same period. The largest was the Kilroy Bay Fire that burned 2,300 acres and was also caused by down power lines.

In 2000, millions of acres burned in Idaho and hundreds of homes burned in other states throughout the country. The 2000 fire season stands out from the others in that it was the culmination of a decade in which an average of 940 homes per year were lost nationwide to wildfire. This triggered the adoption of the National Fire Plan and the accompanying 10 year comprehensive strategy to address the impacts of wildfire on the landscape and communities.



This aerial photo, taken in 1967, shows the Sundance Fire spreading its destructive reach up multiple draws and valleys in the high country of the Selkirk Mountains. Photo courtesy Bonner County Historical Society & Museum

In 2002, the Hope 44 Fire burned 360 acres near the town of Hope. This human caused fire burned in rough steep terrain and heavy vegetation making suppression efforts difficult. Fortunately, there were no homes in the direct path of the fire.

**Table 3-23** shows the number of wildfires in Bonner County from 1981 through 2000.

<b>Year</b>	<b>Total Fires</b>	<b>Number Human Caused</b>	<b>Number Lightning Caused</b>	<b>Total Acres</b>	<b>Acres Human Caused</b>	<b>Acres Lightning Caused</b>
1981	33	15	18	8	4.5	3.5
1982	71	48	23	105	102	3
1983	27	23	4	71	70.5	0.5
1984	119	54	65	160	77	83
1985	81	52	29	28	21	7
1986	102	48	54	98	37	61
1987	64	47	17	312	309	3
1988	65	55	10	49	44	5
1989	74	46	28	121	80	41
1990	62	48	14	149	146	3
1991	107	53	54	2,889	2,849	40
1992	81	49	32	405	351	54
1993	27	16	11	20	19	1

TABLE 3-23 BONNER COUNTY WILDFIRES BY YEAR, CAUSE AND ACREAGE						
Year	Total Fires	Number Human Caused	Number Lightning Caused	Total Acres	Acres Human Caused	Acres Lightning Caused
1994	190	55	135	3,768	685	3,083
1995	45	30	15	45	42	3
1996	56	33	23	350	343	7
1997	31	22	9	15	13	2
1998	83	38	45	74	65	9
1999	106	61	45	155	143	12
2000	115	40	75	744	40	704
TOTAL	1,539	833	706	9,566	5,441	4,125

Source: Inland Forest Management, 2004

A federal wildfire disaster was declared in Bonner County in July 2000. State-wide wildfire disasters have been declared in July 1985, August 1985, August 1986, July 1989, April 1992 and September 1992 (**Table 3-2**). However, there have been no repetitive losses to Bonner County infrastructure associated with the Wildfire hazard.

### ***Probability of Future Events***

Wildfires occur more than once per year and; therefore, the probability of future events is rated as “common”. As Bonner County grows and more home construction occurs in the WUI, the potential for fire starts increases.

### ***Past Wildfire Mitigation Projects***

BONFIRE is a wildfire mitigation program in Bonner County. Mitigation projects completed through 2008 include 443 projects that treated 670 acres and provided protection to 1,235 structures throughout the county. The 2008 revision to the Bonner County WUI Plan (**Appendix G**) contains information on completed projects, some of which are highlighted below.

- A demonstration project was completed along the access road to Schweitzer Mountain, a single access road that serves many millions of dollars in residential and commercial development associated with Schweitzer Mountain Ski Resort. The project ran ¼ mile along both sides of the access road and treated fuels in a band 100 feet below the road and 50 feet above the road. Individual defensible space work was completed at the bottom of the hill between the railroad and Granite Ridge homes.
- Work as accomplished on Gold Hill in the Rocky Road subdivision. Fuels were treated adjacent to roadways in the development and on private property to reduce the fire hazard throughout the subdivision.

- Work was completed on the Baldy Ridge and Janish Road subdivision area.

- Work around homes in the Highway 57-Nordman corridor was completed.

- Progress was made in the Clark Fork/Hope areas by treating both individual homes and communities.

- Group projects were completed in Sagle, Vay, Sandpoint, West Oden Bay and Spirit Lake.



- BONFIRE also worked with the U.S. Forest Service to develop projects in the Priest Lake area including the Lakeview-Reeder Fuels Reduction Project, Outlet to High Bridge FRP, and Highway 57 Safety Project. A project at South Grouse and in the vicinity of Elmira with the BLM was also completed.

## Winter Storms

### *Hazard Description*

Winter storms and blizzards follow a seasonal pattern that begins in late fall and lasts until early spring. These storms have the potential to destroy property, and kill livestock and people. Winter storms may be categorized as sleet, ice storms or freezing rain, heavy snowfall or blizzards, and low temperatures. Blizzards are most commonly connected with blowing snow and low visibility.

A severe winter storm is generally a prolonged event involving snow or ice and extreme cold. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed, and event duration. Severe winter storms create conditions that disrupt essential regional systems such as public utilities, telecommunications, and transportation routes.



According to the Bonner County Emergency Operations Plan (2004), winter storms are a relatively common experience for residents of Bonner County. A combination of temperatures to 30 below zero and high winds can close roads, threaten disruption of utilities, limit access to rural homes, impede emergency services delivery and close businesses. Such storms also create hazardous travel conditions, which can lead to increased vehicular accidents and threaten air traffic. Additionally, motorists stranded due to closed roads and highways may present a shelter problem. The weight of snow on roofs in Bonner County is a concern for roof collapse. Most roofs can support a 40 pound snow load but many have been upgraded for a 55-60 and even a 90 pound load.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including blizzards and wind chill. The NWS's Warning and Advisory Criteria for winter weather is presented in **Table 3-24**.

TABLE 3-24 WARNING AND ADVISORY CRITERIA FOR WINTER WEATHER		
Winter Weather Event	Winter Weather Advisory	Winter Storm/Blizzard Warning
Snow	2-5 inches of snow in 12 hours	6 inches or more in 12 hours, or 8 inches in 24 hours
Blizzard	(see blowing snow)	Sustained winds or frequent gusts to 35 mph with visibility below a ¼ mile for three hours or more
Blowing Snow	Visibility at or less than a ½ mile.	Visibility at or less than a ½ mile in combination with snowfall at or greater than 6 inches and/or freezing precipitation
Ice/Sleet	(see freezing rain/drizzle)	Accumulations of ¼ inch or more of ice.
Freezing Rain/Drizzle	Light precipitation and ice forming on exposed surfaces.	None
Wind Chill	Wind chills of 20 to 39 degrees below zero with a 10 mph wind in combination with precipitation.	Wind chills 40 degrees below zero or colder with a 10 mph wind in combination with precipitation.

Source: National Weather Service

### Location and Extent of Previous Hazard Events

There have been no repetitive losses to Bonner County infrastructure associated with the Winter Storm hazard; however, numerous severe winter storm events have affected the Idaho Panhandle and impacted Bonner County residents. **Table 3-25** presents the winter weather listings from the SHELDUS database.

TABLE 3-25 BONNER COUNTY SEVERE WINTER WEATHER EVENTS				
Date	Location	Property Damage	Crop Damage	Source
December 17, 1961	Bonner County	\$5,000	-	SHELDUS
January 6, 1969	Bonner County	\$11,628	-	SHELDUS
January 26, 1969	Bonner County	\$11,628	-	SHELDUS
January 9, 1972	Bonner County	\$113,636	-	SHELDUS
January 7, 1975	Bonner County	\$1,136	-	SHELDUS
November 10, 1975	Bonner County	\$1,136	-	SHELDUS
February 16, 1976	Bonner County	\$1,136	-	SHELDUS
January 1, 1979	Bonner County	\$11,364	-	SHELDUS
February 1, 1979	Bonner County	\$1,136	-	SHELDUS
December 20, 1987	Bonner County	\$7,143	-	SHELDUS
December 22, 1987	Bonner County	\$1,136	-	SHELDUS
December 30, 1988	Bonner County	\$2,381	-	SHELDUS
January 31, 1989	Bonner County	\$71,429	\$7,143	SHELDUS
November 20, 1990	Bonner County	\$4,167	-	SHELDUS
December 18, 1990	Bonner County	\$11,364	\$113,636	SHELDUS
December 18, 1990	Bonner County	\$6,250	-	SHELDUS
December 30, 1990	Bonner County	\$2,500	-	SHELDUS
February 28, 1991	Bonner County	\$7,143	-	SHELDUS

TABLE 3-25 BONNER COUNTY SEVERE WINTER WEATHER EVENTS				
Date	Location	Property Damage	Crop Damage	Source
August 24, 1992	Bonner County	\$139	\$13,889	SHELDUS
November 19, 1992	Bonner County	\$2,500	-	SHELDUS
November 21, 1992	Bonner County	\$12,500	\$125,000	SHELDUS
January 1, 1993	Bonner County	-	\$7,143	SHELDUS
January 7, 1993	Bonner County	\$10,000	-	SHELDUS
September 1, 1993	Bonner County	-	\$11,364	SHELDUS
December 1, 1994	Bonner County	\$1,136	-	SHELDUS
April 15, 1995	Bonner County	-	\$100,000	SHELDUS
November 16, 1996	Bonner County	\$857,143	-	SHELDUS
January 11, 1998	Bonner County	\$16,667	-	SHELDUS
March 4, 1998	Bonner County	\$3,571	-	SHELDUS
December 18, 1999	Bonner County	\$66,667	-	SHELDUS
December 1, 2001	Bonner County	\$16,667	-	SHELDUS

State-wide winter storm disasters were declared in 1996, 1997 and 2008 (**Table 3-2**). A brief synopsis of winter storms chronicled in the local newspaper is presented below.

**Winter 1995/1996** – Sandpoint High School’s pitched roof collapsed over the gymnasium from the weight of wet, heavy snow. Roofs throughout the county sustained damage, including the one covering the Panida Theater. (*Storms Send LPOSD Skyward to Shovel Roofs*, Bonner County Daily Bee, January 30, 2008).

**December 4, 2007** – With nearly 56 inches of snow falling on Schweitzer and reports of 18-24 inches in Sandpoint, the storm was easily the worst of the winter season. (*Storm Wreaks Havoc in Bonner County*, Bonner County Daily Bee).

**January 31, 2008** – Commissioners voted 2-0 during a special meeting to declare Bonner County a state of emergency due to the amount of snowfall and its potential to jeopardize public safety and private property. Snowstorms this season were blamed for caving in the roof of the Brass Alley in Priest River and the roof of Cedars of Idaho in Colburn. The storms also made road conditions treacherous and caused power outages. (*County Declares Snow Emergency*, Bonner County Daily Bee).

**February 2, 2008** - Continued heavy snowfall in Bonner County caused a disaster emergency in Bonner, Kootenai, Latah and Boundary counties. Idaho National Guard troops were deployed Saturday from Lewiston to shovel snow from the roofs of Sandpoint High School and Farmin Stidwell Elementary. The troops joined a large number of private groups already working to clear snowy roofs throughout Bonner County. School closures were in effect throughout the county. The Bonner County Sheriff’s inmate labor program, as well as Handyman Services in Sandpoint, received more requests for snow shoveling than they could fill (*Residents Work To Keep On Top Of Snow*, Bonner County Bee).

**April 2, 2008** – The 1.7 inches of March snowfall was enough to put the 2007-2008 winter in the record books with a total 129.34 inches, surpassing the 118.59 total recorded in the 1996-97 season. The record for the most total snow was in 1915 when 192 inches was recorded, more than 100 inches above the yearly average. (*Late Snow Packing Big Punch*, Bonner County Daily Bee).

**December 23, 2008** - Schweitzer Mountain Resort reported six inches of new snow in a 24-hour period, bringing the season total up to 76 inches. The mountain should get even more snow in the coming days, as forecasts call for continued cold weather with eight to 12 inches of snow in the valleys and as much as 12 to 15 inches in the mountains. (*More Snow Forecast for Region*, Bonner County Daily Bee).

### ***Probability of Future Events***

Severe winter storms occur in Bonner County almost every year. Therefore, the probability of a disastrous winter storm event occurring in the future is rated as “frequent”.

### ***Past Winter Storm Mitigation Projects***

The Bonner County School District hired an engineer to evaluate the roofs of all its buildings and make a recommendation for suitable snow loads. It was recommended that maintenance crews clear off buildings when snow reaches three feet deep and on portables when snow reaches 18 inches. A one-inch pipe is used to determine the snow's weight; it is inserted into the snow and then weighed for water content.

### 3.3 HAZARD PRIORITIZATION

Hazard prioritization was accomplished by determining which hazards had caused prior fatalities, resulted in property damage, had the potential to cause the most economic hardship within the county, and had the potential to affect Bonner County residents in the future.

#### ***Hazard Frequency and Probability of Future Events***

As described in *Section 3.2*, frequency for each hazard was calculated by dividing the total number of events by the number of years of record. Probability of a hazard event occurring in the future was based on hazard frequency as categorized by the number of times the hazard was likely to occur over a ten year period. Probability was broken down as follows:

- Common – greater than 1 event per year (frequency greater than 1)
- Frequent – less than 1 event per year but greater than 1 event every 10 years (frequency greater than 0.1 but less than 1)
- Infrequent – less than 1 event every 10 years (frequency less than 0.1)

A summary of hazard frequencies and their probability of future occurrence are presented in **Table 3-26**.

<b>TABLE 3-26 BONNER COUNTY HAZARD SUMMARIES, FREQUENCIES AND PROBABILITY OF FUTURE EVENTS</b>					
<b>Hazard</b>	<b>Period of Record (Years)</b>	<b>Number of Events</b>	<b>Frequency</b>	<b>Probability</b>	<b>Data Sources</b>
Avalanche	13	1	0.08	Infrequent	SHELDUS
Aviation Accident	41	45	1.1	Common	NTSB
Communicable Disease	3	97	32.3	Common	Idaho Health Dept.
Dam Failure	100	0	0	Infrequent	IBHS, local sources
Drought	58	2	0.03	Infrequent	SHELDUS, NCDC
Earthquakes	90	5	0.05	Infrequent	SHELDUS, IBHS, local sources
Flooding	58	10	0.17	Frequent	NCDC, SHELDUS
Ground Transportation Accident	5	29,349	5,870	Common	Idaho Transportation Dept.
Hazardous Material Incidents	18	45	2.3	Common	NRC
Landslide	6	2	0.33	Frequent	IBHS, local sources
Railroad Accident	31	149	4.8	Common	Federal Railroad Administration
Severe Wind/Hail/ Tornado	49	49	1.58	Common	SHELDUS
Terrorism	35	3	0.09	Infrequent	Various

**TABLE 3-26  
BONNER COUNTY HAZARD SUMMARIES, FREQUENCIES AND  
PROBABILITY OF FUTURE EVENTS**

<b>Hazard</b>	<b>Period of Record (Years)</b>	<b>Number of Events</b>	<b>Frequency</b>	<b>Probability</b>	<b>Data Sources</b>
Volcanic Eruptions	200+	1	0.005	Infrequent	Various
Utility Outages	3	6	2.0	Common	NCDC, SHELDUS
Wildfires	20	1,539	77	Common	Bonner Co. WUI Plan
Winter Storms	49	51	1.02	Common	SHELDUS

### ***Hazard Prioritization***

Hazard prioritization was determined by the AHM Plan steering committee based on input from the public and review of hazard profile information. It was determined that all hazards with a probability ranking of “common” or “frequent” should be carried forward in the planning effort, with a few exceptions. It was felt that the transportation-related hazards which occur on a regular basis in Bonner County (Aviation Accidents, Ground Transportation Accidents, and Railroad Accidents) should be addressed by the state and federal agencies with jurisdiction over these activities. Since the Communicable Disease hazard was being addressed in a regional pandemic planning effort, it was felt that this hazard should not go forward in the AHM PLAN. Since the Utility Outage hazard is often a secondary effect of Severe Wind and Winter Storm hazards, it was felt that mitigation of this hazard would be addressed indirectly through the others. Finally, despite the fact that the Earthquake hazard was ranked “infrequent” it was determined that it should go forward in the AHM Plan because of its likelihood to cause catastrophic damage to infrastructure in Bonner County.

As a result of this analysis, Bonner County identified seven major hazards that consistently affect this geographic area and should be the focus the mitigation strategies developed in the AHM Plan:

1. Wildfire
2. Winter storms
3. Flooding
4. Hazardous materials incidents
5. Severe Wind
6. Landslides
7. Earthquake

Other hazards discussed were deemed low risk and low probability and for the most part are not addressed by mitigation actions at this time.

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## 4.0 RISK ASSESSMENT – VULNERABILITY ANALYSIS

A risk assessment was conducted to address requirements of the DMA 2000 for evaluating the risk to the community from the highest priority hazards. DMA 2000 requires measuring potential losses to critical facilities and property resulting from natural hazards by assessing the vulnerability of buildings and critical infrastructure to natural hazards. In addition to the requirements of DMA 2000, the risk assessment approach taken in this study evaluated risks to vulnerable populations and also examined the risk presented by man-made hazards. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are cumulatively the most vulnerable to hazards.

The risk assessment approach used for the Bonner County AHM Plan entailed using Geographic Information System (GIS) software and data to develop vulnerability models for people, structures, and critical facilities and evaluating those vulnerabilities in relation to hazard profiles that model where hazards exist. This type of approach to risk assessment is very dependent on the detail and accuracy of the data used during the analysis. Additionally, some types of hazards are extremely difficult to model. The schedule and resources available for conducting this risk assessment dictated that in general, existing data be used to perform the assessment. The existing information available is extensive but also has many limitations. Results of risk assessment allow hazards to be compared and relative comparisons to be made of areas within the jurisdiction. The hazard assessment should not be used for site specific determination.

### 4.1 IDENTIFYING ASSETS AND VULNERABLE POPULATIONS

Assessing vulnerability requires understanding the location and importance of those things that the community values. For the purposes of this risk assessment, building structural values, buildings that house critical services to the community, and people, were identified as valued community resources. To assess the vulnerability of these community assets, a model of their locations and characteristics was developed to be used in conjunction with hazard profiles for performing the risk assessment.

#### ***Critical Facilities and Infrastructure***

Critical facilities are of particular concern because they provide, or are used to provide, essential products and services that are necessary to preserve the welfare and quality of life and fulfill important public safety, emergency response, and/or disaster recovery functions.

Critical facilities are defined as facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection). Critical facilities include: 911 emergency call centers, emergency operations centers, police and fire stations, public works facilities, sewer and water facilities, hospitals, bridges and roads, and shelters; and facilities

that, if damaged, could cause serious secondary impacts (i.e., hazardous material facility). Critical facilities also include those facilities that are vital to the continued delivery of community services or have large vulnerable populations. These facilities may include: buildings such as the jail, law enforcement center, public services buildings, senior centers, community corrections center, the courthouse, and juvenile services building and other public facilities such as hospitals, nursing homes and schools. **Appendix D** lists critical facilities in Bonner County.

Bonner County hired Mr. Bob Hatfield, chairman of the local wildfire mitigation group BONFIRE to assist with local coordination. Mr. Hatfield identified the critical facilities throughout Bonner County and provided details on their location, function, and data on replacement value. A GIS layer of the critical facilities was then developed for use in the hazard risk assessment.

Analysis of building stock values is based on the building stock data available from the FEMA HAZUS-MH MR3 (v1.3)/September 2007 software. Building stock data available in HAZUS were compiled at the census block level. To determine building stock value exposure amounts (buildings at risk by dollar value), building exposure per census block was intersected with the various hazard buffers.

### ***Vulnerable Populations***

A significant factor in the impact of any hazard is the effect it has on people. The severity of the impact is related to the intensity of the hazard, the population affected, and the population's ability to protect itself. To model the ability to self-protect and recover from hazards, age and indicators of economic well being were used. The population data used to develop the vulnerability model was derived from the 2000 Census. To model overall vulnerability the following equation was used:

- Societal Risk Score =[societal variable population for block / maximum societal variable population per jurisdiction i.e. Bonner County] / total number of societal variables

This formula creates a score for each variable that is based on the percentage of that variable in the jurisdiction and that was normalized to a common scale as the other variables. The societal variables used to determine the overall societal vulnerability per census block included:

- Population Density
- Age > 65
- Age < 18
- Income < Poverty Level
- No High School
- Population with Disabilities

Each block was assigned a score for individual societal vulnerabilities and an average societal vulnerability by summing the individual scores and dividing by the total number of variables evaluated. **Figure 3** depicts total societal vulnerability by census block.

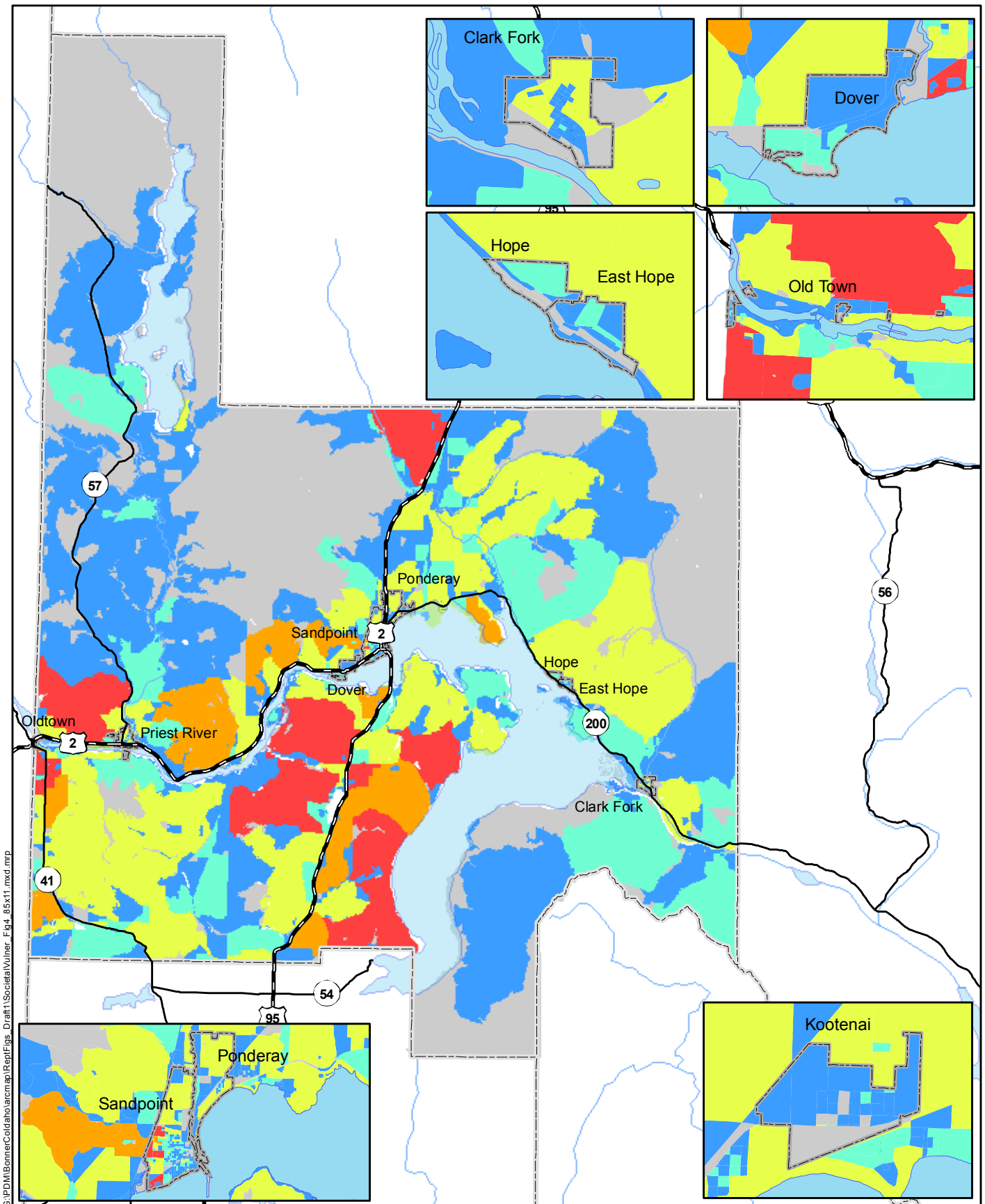
### **Future Growth and Land Use Trends**

Bonner County is 1,737.67 square miles and has a population of 41,050 (2007 estimate) residing in subdivisions, the City of Sandpoint and the incorporated communities of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, and Priest River. **Table 4-1** illustrates the growth in Bonner County compared to the United States and State of Idaho. Historical population trends in Bonner County and its incorporated cities are presented in **Table 4.2**.

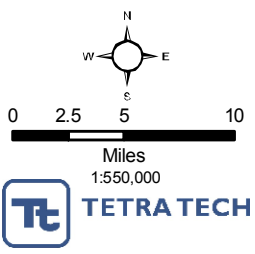
<b>TABLE 4-1</b>				
<b>PERCENTAGE POPULATION GROWTH</b>				
<b>Place</b>	<b>1970-1980</b>	<b>1980-1990</b>	<b>1990-2000</b>	<b>2000-2003</b>
United States	11%	10%	13%	3%
State of Idaho	32%	7%	29%	6%
Bonner County	55%	10%	38%	6%

<http://www.sandpoint.com/Community/economy.asp>

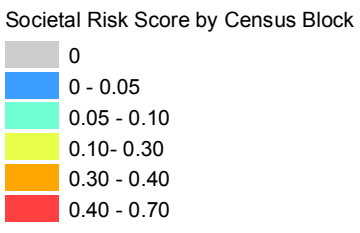
<b>TABLE 4-2</b>							
<b>60 YEAR POPULATION TRENDS IN BONNER COUNTY</b>							
<b>Place</b>	<b>1940</b>	<b>1950</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Bonner County	15,667	14,853	15,587	15,560	24,163	26,622	36,835
% change from previous census	-	-5.2%	4.9%	-0.2%	55.3%	10.2%	38.4%
City of Clark Fork	430	387	452	367	449	448	530
% change from previous census	-	-10.0%	16.8%	-23.2%	22.3%	-0.2%	18.3%
City of Dover	-	-	-	-	190	294	342
% change from previous census	-	-	-	-	-	54.7%	16.3%
City of East Hope	115	149	154	175	258	215	200
% change from previous census	-	29.6%	3.2%	13.6%	47.4%	-16.7%	-7.0%
City of Hope	116	111	96	63	106	99	79
% change from previous census	-	-4.3%	-13.5%	-34.4%	68.3%	-6.6%	-20.2%
City of Kootenai	214	199	180	168	280	327	441
% change from previous census	-	-7.0%	-9.5%	-6.7%	66.7%	16.8%	34.9%
City of Oldtown	-	358	211	161	257	151	190
% change from previous census	-	-	-41.1%	-23.7%	59.6%	-41.2%	25.8%



G:\PDM\Bonner\Cold\ahol\arcmap\Rept\Figs\_Draft1\SocietalVulner. Fig4\_85x11.mxd.mpr



City Boundaries



February, 2009

**Figure 3**  
**Bonner County, Idaho**  
**Societal Vulnerability Map**  
**Bonner County**  
**All Hazard Mitigation Plan**

TABLE 4-2 60 YEAR POPULATION TRENDS IN BONNER COUNTY							
Place	1940	1950	1960	1970	1980	1990	2000
City of Ponderay	-	248	231	275	399	449	638
% change from previous census	-	-	-6.9%	19.0%	45.1%	12.5%	42.1%
City of Priest River	1,056	1,592	1,749	1,493	1,639	1,560	1,754
% change from previous census	-	50.8%	9.9%	-14.6%	9.8%	-4.8%	12.4%
City of Sandpoint	4,356	4,265	4,355	4,144	4,460	5,203	6,835
% change from previous census	-	-2.1%	2.1%	-4.8%	7.6%	16.7%	31.4%

Source: U.S. Bureau of Census

Bonner County has attracted thousands of new residents since the mid-1980s. Between 1990 and 2000, the county's population grew 38 percent from 26,622 to 36,835. In the next three years, it grew to 39,162. Since 2003, population growth has accelerated, and very rapid population growth is likely over the next few years. Much of the future growth is expected to take place in the WUI and/or adjacent to lakes and rivers. <http://www.sandpoint.com/Community/economy.asp>

### ***Future Infrastructure and Critical Facilities***

US-95 is the primary north-south highway in Idaho and is the major transportation and commercial link for northern Idaho. Rapid growth in Bonner and Kootenai counties has caused intermittent congestion along US-95 between the areas of Garwood and Sagle. Traffic volumes have increased beyond the original design for the roadway, resulting in an increased accident rate. Idaho Transportation Department projects in this corridor will provide a 31.5-mile multi-lane roadway that will improve safety and accommodate growth. Plans are to widen US-95, pave outer roads in Bonner County, and create an alternate route to bypass Sandpoint. The Sandpoint bypass consists of constructing 2.1 miles of a new alignment connecting US-95, from the northern end of the Long Bridge, directly to SH-200 and US-95 north of Sandpoint. The project includes six bridges, 65 retaining walls, and a pedestrian/bike pathway. The project, known as the Sand Creek Byway, is a segment of the US-95 North/South Alternate Route. [http://www.sandpointid.net/N.Idaho\\_Traffic.html](http://www.sandpointid.net/N.Idaho_Traffic.html)

Local officials have indicated that there are no future buildings or critical facilities proposed for Bonner County that would be located in identified hazard area. However, mitigation options will be considered in all future land use decisions.

## 4.2 HAZARD IMPACT AREAS

Hazard impact areas describe the geographic extent a hazard can impact a jurisdiction and are uniquely defined on a hazard-by-hazard basis. For the purposes of conducting the risk analysis, most hazard impact areas were defined as the percentage of area in each census block that would be affected. The earthquake hazard was modeled using FEMA's HAZUS software, as described below.

### **Wildfire**

Wildfire does not present a uniform risk to Bonner County. The county covers approximately 1.1 million acres, most of which is forested. Public lands occupy 60 percent of the land base. Extended dry weather coupled with dense vegetation are the major factors affecting fire behavior and the severity of damage in Bonner County. A wildfire hazard risk assessment was completed for the Bonner County WUI Fire Mitigation Plan (Inland Forest Management, 2004; **Appendix G**). **Appendix D** contains a wildfire risk map from the WUI Plan that shows the communities and values at risk and also summarized the vulnerability of Bonner County critical facilities to wildfire and their approximate replacement value. To complete the vulnerability hazard assessment, GIS was used to intersect the WUI dataset developed by U.S. Forest Service for the Healthy Forest Restoration Act (2004) with a dataset from the 2000 census. Spatial data for Bonner County critical facilities was intersected with the WUI layer. The intersection of these datasets identified societal values and values of the built environment at risk from wildfire (**Tables 4-4** through **4-13**).

### **Winter Storms**

The entire project area is in the Warm Summer Continental climatic region, according to the Köppen Climate Classification for the Conterminous United States developed by the Idaho State Climate Services Center at the University of Idaho. In this climatic zone, the average temperature of the warmest month is  $> 10^{\circ}\text{C}/50^{\circ}\text{F}$  and is  $< -3^{\circ}\text{C}/27^{\circ}\text{F}$  for the coldest month. Because the population of Bonner County is concentrated in the lower elevations, the hazard profile for winter storms is considered uniform for the entire project area.

### **Flooding**

Q3 flood data is a digital representation of certain features of FEMA's Flood Insurance Rate Maps, intended for use with desktop mapping and GIS technology. Digital Q3 flood data has been developed by scanning the existing FIRM hardcopy vectorizing a thematic overlay of flood risks. The vector Q3 flood data files contain only certain features from the existing FIRM hardcopy. For the risk assessment, vector Q3 Flood Data was intersected with the 2000 U.S. Census data for Bonner County in order to estimate population at risk from flooding. The percentage of flood risk area was calculated per census block. Building exposure data was

taken from the 2000 census. Building exposure and population risk were calculated by taking the same ratio of their total block numbers that was equivalent to the ratio of flood risk acreage verses the total acreage of the block. Spatial data for Bonner County critical facilities was intersected with the flood hazard area.

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's FIRM or Flood Hazard Boundary Maps. Each zone reflects the severity or type of flooding in the area. **Table 4-3** presents the critical facilities in High Risk Q3 FEMA Flood Risk Zones. **Appendix D** presents maps of Bonner County with an overlay of the FEMA Q3 flood data. It should be noted that accurate floodplain information is kept at the Bonner County Planning Department and may differ than what is shown in the Q3 data. **Appendix D** also contains a table showing the flood vulnerability of Bonner County's critical facilities and their approximate replacement value.

TABLE 4-3 CRITICAL FACILITIES IN HIGH RISK Q3 FEMA FLOOD RISK ZONES		
Location	Facility	Function
Blanchard	Blanchard Creek	Dams
Clark Fork	CX Ranch	Airport
Clark Fork	CX Ranch NR 2	Airport
Clark Fork	Riverlake	Airport
Cocolalla	Sagle Fire District Station 2	Emergency Response - Fire
Dover	Westside Fire District Station 1	Emergency Response - Fire
Hope	Hope Fire Dept	Emergency Response - Fire
East Hope	East Hope City Hall	City Infrastructure
Hope	Hope City Hall	City Infrastructure
Hope	Hope City Shop	City Infrastructure
Hope	Hope Hotel	City Infrastructure
Hope-East Hope	Verizon Phone Switch Bldg	Communications
Kootenai	Kootenai City Hall	City Infrastructure
Kootenai	Kootenai Elementary School	Schools
Oldtown	Oldtown City Hall	City Infrastructure
Oldtown	Oldtown City Shop	City Infrastructure
Oldtown	Power Substation	Electric Power
Oldtown	Sewage Pump Station	Waste Water
Ponderay	Ponderay City Hall	City Infrastructure
Ponderay	Northside Fire District Station	Emergency Response - Fire
Ponderay	Old Bank Building	City Infrastructure
Ponderay	Ponderay Police Dept	Emergency Response - Police
Priest Lake Area	Priest Lake Outfall Dam	Dams
Priest Lake Area	Coolin-Cavanaugh Bay Sewer District Pump 1	Waste Water
Sandpoint	Sandpoint Wastewater Treatment Plant	Waste Water
Sandpoint	Sandpoint Junior Academy	Schools

### **Hazardous Material Incidents**

Based on review of historical accounts of hazardous material incidents from the National Response Center database and input from the public meetings, it was determined that a

significant component of risk in this category was related to transportation of hazardous materials and transportation infrastructure. To model the spatial distribution of this risk a GIS data layer of major transportation arteries was used, which included highways and railroads. This road layer was then buffered by 0.25 miles, and then the impact area was calculated by census block. Spatial data for Bonner County critical facilities was intersected with the hazmat buffer. **Appendix D** indicates the vulnerability of Bonner County critical facilities to hazardous material incidents and their approximate replacement value.

### **Severe Wind**

According to FEMA's wind zone classifications the entire project area is in Zone I (130 mph Design Wind Speeds). [http://www.fema.gov/plan/prevent/saferoom/tsfs02\\_wind\\_zones.shtml](http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtml). Based on review of historic weather data, the entire project area has been classified with a uniform risk for severe wind events.

### **Landslides**

Landslide risk was determined by using GIS data provided by the Idaho State Lands Department. The landslide data was originally created to mitigate stormwater runoff and assist with Best Management Practices to protect source water in the State of Idaho. The landslide risk data was created by using geology and topographic maps to find the hazard potentials for surface erosion and mass failure. The hazard ratings developed are limited by the accuracy of the maps.

The Idaho State Lands Landslide data was intersected with Bonner County census data in order to estimate population at risk from landslide. A small portion of southern Bonner County was not covered by the landslide data. The percentage of landslide risk area was calculated per census block. Building exposure data was taken from the 2000 census data. Building exposure and population risk were calculated by taking the same ratio of their total census tract numbers that was equivalent to the ratio of landslide risk acreage verses the total acreage of the tract. Spatial data for Bonner County critical facilities was intersected with the landslide hazard areas. **Appendix D** presents landslide risk maps showing Bonner County critical facilities. **Appendix D** also indicates the vulnerability of Bonner County critical facilities to landslides and their approximate replacement value.

### **Earthquakes**

Earthquakes in Bonner County and the Sandpoint area are infrequent and relatively weak. However, Sandpoint lies within an earthquake zone noted for moderate earthquake threat according to the 1191 Uniform Building Code Seismic Zone Map. Sandpoint is built on lake sediments and is in a high risk area for seismic shaking.

The U.S. Geological Survey (USGS) National Seismic Hazard Maps (2008) display earthquake ground motion for various probability levels. Colors on the map show levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (g is the acceleration of a falling object due to gravity) with the highest range (48 to 64 percent g) being present along the west coast (CA, OR, WA). The pattern of hazard across Bonner County indicates three zones of ground shaking. The north portion of the county including the Priest Lake area is in 12 to 14 percent g range while the southeast corner of the county is in the 16 to 18 percent g range. All incorporated cities in Bonner County are in the 14 to 16 percent g range. The 10 to 12 percent g range indicates the approximate threshold of damage to older (pre 1965) dwellings or dwellings not made to resist earthquakes. **Appendix D** presents an earthquake risk map showing the location of Bonner County critical facilities with respect to the ground shaking zones.

The FEMA HAZUS earthquake loss estimation methodology was used for the risk assessment. This is a software program that uses mathematical formulas and information about building stock, local geology and the location and size of potential earthquakes, economic data, and other information to estimate losses from a potential earthquake. A “Level Two” HAZUS analysis that required input of specific information about Bonner County critical facilities was conducted. The model earthquake used for analysis was based on discussions with Bill Phillips of the Idaho Geological Survey (Phillips, 2009). A random earthquake centered under Sandpoint was used with a depth of 10 kilometers. It was modeled as a shallow crustal extensional event with a magnitude of 6. **Appendix E** presents the output of the HAZUS analysis.

#### 4.3 ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

The methodology used in risk calculations presents a quantitative assessment of the vulnerability of the building stock, population, and critical facilities to individual hazards and cumulatively to all hazards. For hazards that are uniform across the jurisdiction (i.e. winter storms, wind/hail/tornadoes) the methodology presented below will determine annualized property loss.

- Exposure x Frequency x Hazard Loss Magnitude

Where:

- Exposure = building stock, vulnerable population, or critical facilities at risk
- Frequency = annual number of events determined by calculating the number of hazard events / period of record
- Magnitude = percent of damage expected calculated by: (property damage/# incidents)/ total building stock, critical facilities, or vulnerable population

For hazards that are not uniform across the jurisdiction and instead occur in specific areas (e.g. flooding, wildfire, landslide, hazardous material incidents, etc.) the hazard risk area must factor into loss estimation calculations. Using GIS, the hazard risk area was intersected with the census tract data to determine the percentage of each census tract containing the hazard. This percentage was then applied to population and building stock data for each census tracts and summed to determine the vulnerability of the jurisdiction. For hazards without property damage from SHELDS magnitude cannot be calculated and therefore, only the “vulnerability” of the building stock or population was computed.

Census tract data (2000) was used to establish building stock and population vulnerability for the various jurisdictions in Bonner County, as summarized below:

▪ 16017950100	Clark Fork	65.51% of census tract
	East Hope	24.72% of census tract
	Hope	9.77% of census tract
▪ 16017950200	Kootenai	5.57% of census tract
	Ponderay	8.06% of census tract
	Sandpoint	86.37% of census tract
▪ 16017950300	Ponderay	8.54% of census tract
	Sandpoint	91.46% of census tract
▪ 16017950400	Dover	4.77% of census tract
	Sandpoint	95.23% of census tract
▪ 16017950500	Priest River	90.23% of census tract
	Oldtown	9.77% of census tract

Critical facility vulnerability was based on their spatial location within the jurisdictions intersected with the hazard risk areas.

**Table 4-4** presents the results of risk calculations for Bonner County. While the results are presented as dollar values for Building \$ Risk, numbers of people effected for Societal Risk (persons under the age of 18, over the age of 65, and living below the poverty level), and numbers of facilities effected, they should not be interpreted literally as estimates of actual values. Due to data and modeling limitations the values presented are more appropriately used to evaluate the relative risk posed by the different hazard types. **Tables 4-5 through 4-13** contain the risk calculations for the incorporated towns of Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, Priest River, and Sandpoint. **Table 4-14** presents earthquake loss estimates for Bonner County generated by HAZUS.

**TABLE 4-4  
BONNER COUNTY HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$4,585,672,000	\$369,659,000	\$3,913,558,077	15,438	35,253 <18 36,240 >65 42,438 <Poverty	\$358,109,000	182
Winter Storms	1.02	0.000461%	\$4,585,672,000	\$369,659,000	*\$21,553	18,330	9,401 <18 4,835 >65 5,662 <Poverty	*\$1,687	189
Flooding	0.17	NA	\$4,585,672,000	\$369,659,000	\$535,917,351	2,254	9,333 <18 4,800 >65 5,621 <Poverty	\$41,422,000	30
Hazardous Materials	2.30	NA	\$4,585,672,000	\$369,659,000	\$629,156,105	2,299	11,447 <18 5,887 >65 6,894 <Poverty	\$534,742,000	134
Severe Wind	1.58	0.000463%	\$4,585,672,000	\$369,659,000	*\$33,533	18,330	9,401 <18 4,835 >65 5,662 <Poverty	*\$2,625	189
Landslides (Low Risk)	0.10	NA	\$4,585,672,000	\$369,659,000	\$897,739,298	1,099	15,545 <18 11,370 >65 10,022 <Poverty	\$91,563,000	63
Landslides (Medium Risk)	0.21	NA	\$4,585,672,000	\$369,659,000	\$2,627,636,151	10,777	46,429 <18 23,879 >65 27,963 <Poverty	\$275,186,000	125
Landslides (High Risk)	0.03	NA	\$4,585,672,000	\$369,659,000	\$245,001,981	3,918	5,226 <18 2,688 >65 3,148 <Poverty	\$230,000	4
Earthquake (HAZUS)	0.05	NA	\$4,585,672,000	\$369,659,000	\$97,294,384,600	18,330	-	\$49,702,805	189

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELUDS

**TABLE 4-5  
CITY OF CLARK FORK HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$203,080,408	\$16,765,000	\$67,155,015	300	28 <18 21 >65 23 <Poverty	\$16,765,000	16
Winter Storms	1.02	0.000461%	\$203,080,408	\$16,765,000	*\$233	908	131 <18 96 >65 108 <Poverty	*\$43	16
Flooding	0.17	NA	\$203,080,408	\$16,765,000	\$13,707,410	61	6 <18 4 >65 5 <Poverty	0	0
Hazardous Materials	2.30	NA	\$203,080,408	\$16,765,000	\$6,447,944	29	3 <18 2 >65 2 <Poverty	\$16,060,000	13
Severe Wind	1.58	0.000463%	\$203,080,408	\$16,765,000	*\$363	908	131 <18 96 >65 108 <Poverty	*\$67	16
Landslides (Low Risk)	0.290	NA	\$203,080,408	\$16,765,000	\$80,049,302	41	34 <18 25 >65 28 <Poverty	\$16,765,000	16
Landslides (Medium Risk)	0.040	NA	\$203,080,408	\$16,765,000	\$58,898,412	263	25 <18 18 >65 21 <Poverty	0	0
Landslides (High Risk)	0.001	NA	\$203,080,408	\$16,765,000	\$9,200,075	358	4 <18 3 >65 3 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$203,080,408	\$16,765,000	\$453,339,582	908	-	\$71,423	16

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELUS

**TABLE 4-6  
CITY OF DOVER HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$37,236,447	\$21,180,000	\$33,419,034	102	0 <18 3 >65 1 <Poverty	\$21,180,000	6
Winter Storms	1.02	0.000461%	\$37,236,447	\$21,180,000	*\$202	114	69 <18 69 >65 13 <Poverty	*\$9	6
Flooding	0.17	NA	\$37,236,447	\$21,180,000	\$37,236,447	0	1 <18 1 >65 0 <Poverty	0	0
Hazardous Materials	2.30	NA	\$37,236,447	\$21,180,000	\$3,161,767	10	0 <18 0 >65 0 <Poverty	\$20,700,000	5
Severe Wind	1.58	0.000463%	\$37,236,447	\$21,180,000	*\$314	114	69 <18 69 >65 13 <Poverty	*\$14	6
Landslides (Low Risk)	0.00	NA	\$37,236,447	\$21,180,000	\$6,601,263	8	1 <18 1 >65 0 <Poverty	0	0
Landslides (Medium Risk)	0.33	NA	\$37,236,447	\$21,180,000	\$26,643,862	82	2 <18 2 >65 0 <Poverty	\$20,700,000	5
Landslides (High Risk)	0.00	NA	\$37,236,447	\$21,180,000	\$2,558,945	20	0 <18 0 >65 0 <Poverty	0	0
Earthquake (HAZUS)	0.05	-	\$37,236,447	\$21,180,000	\$1,433,875,215	114	-	\$1,509,805	6

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHEL DUS

**TABLE 4-7  
CITY OF EAST HOPE HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$76,634,116	\$3,168,000	\$25,341,515	113	2 <18 7 >65 1 <Poverty	\$3,168,000	4
Winter Storms	1.02	0.000461%	\$76,634,116	\$3,168,000	*\$153	343	17 <18 9 >65 4 <Poverty	*\$142	4
Flooding	0.17	NA	\$76,634,116	\$3,168,000	\$5,172,608	23	0 <18 1 >65 0 <Poverty	\$128,000	2
Hazardous Materials	2.30	NA	\$76,634,116	\$3,168,000	\$2,433,186	11	0 <18 1 >65 0 <Poverty	\$40,000	1
Severe Wind	1.58	0.000463%	\$76,634,116	\$3,168,000	*\$68	343	17 <18 9 >65 4 <Poverty	*\$222	4
Landslides (Low Risk)	0.170	NA	\$76,634,116	\$3,168,000	\$30,207,284	16	2 <18 8 >65 1 <Poverty	0	0
Landslides (Medium Risk)	0.150	NA	\$76,634,116	\$3,168,000	\$22,225,816	99	2 <18 6 >65 1 <Poverty	\$100,000	1
Landslides (High Risk)	0.001	NA	\$76,634,116	\$3,168,000	\$3,471,726	135	0 <18 1 >65 0 <Poverty	\$3,068,000	5
Earthquake (HAZUS)	0.05	NA	\$76,634,116	\$3,168,000	\$171,071,540	343	-	\$31,333	4

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELUDS

**TABLE 4-8  
CITY OF HOPE HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$30,270,476	\$10,940,000	\$10,009,898	45	1 <18 0 >65 0 <Poverty	\$10,940,000	8
Winter Storms	1.02	0.000461%	\$30,270,476	\$10,940,000	*\$67	135	17 <18 9 >65 4 <Poverty	*\$12	8
Flooding	0.17	NA	\$30,270,476	\$10,940,000	\$2,043,180	9	0 <18 0 >65 0 <Poverty	\$1,180,000	3
Hazardous Materials	2.30	NA	\$30,270,476	\$10,940,000	\$961,109	4	0 <18 0 >65 0 <Poverty	\$10,940,000	8
Severe Wind	1.58	0.000463%	\$30,270,476	\$10,940,000	*\$104	135	17 <18 9 >65 4 <Poverty	*\$19	8
Landslides (Low Risk)	0.130	NA	\$30,270,476	\$10,940,000	\$11,931,877	6	1 <18 0 >65 0 <Poverty	\$10,940,000	8
Landslides (Medium Risk)	0.190	NA	\$30,270,476	\$10,940,000	\$8,779,197	39	0 <18 0 >65 0 <Poverty	0	0
Landslides (High Risk)	0.002	NA	\$30,270,476	\$10,940,000	\$1,371,332	53	0 <18 0 >65 0 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$30,270,476	\$10,940,000	\$67,573,258	135	-	\$200,549	8

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHEL DUS

**TABLE 4-9  
CITY OF KOOTENAI HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$50,206,685	\$9,484,000	\$46,509,416	159	7 <18 3 >65 3 <Poverty	\$9,484,000	4
Winter Storms	1.02	0.000461%	\$50,206,685	\$9,484,000	*\$243	171	126 <18 51 >65 61 <Poverty	*\$68	4
Flooding	0.17	NA	\$50,206,685	\$9,484,000	\$8,564,367	29	1 <18 0 >65 1 <Poverty	0	0
Hazardous Materials	2.30	NA	\$50,206,685	\$9,484,000	\$6,043,467	21	1 <18 0 >65 0 <Poverty	\$9,484,000	4
Severe Wind	1.58	0.000463%	\$50,206,685	\$9,484,000	*\$378	171	126 <18 51 >65 61 <Poverty	*\$107	4
Landslides (Low Risk)	0.00	NA	\$50,206,685	\$9,484,000	\$13,521,149	2	2 <18 1 >65 1 <Poverty	0	0
Landslides (Medium Risk)	0.33	NA	\$50,206,685	\$9,484,000	\$32,754,059	112	5 <18 2 >65 2 <Poverty	\$9,484,000	4
Landslides (High Risk)	0.00	NA	\$50,206,685	\$9,484,000	\$708,719	46	0 <18 0 >65 0 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$50,206,685	\$9,484,000	\$586,050,204	171	-	\$2,915,191	4

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELDDUS

**TABLE 4-10  
CITY OF OLDTOWN HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$30,100,242	\$11,950,000	\$29,697,865	143	1 <18 3 >65 4 <Poverty	\$715,000	3
Winter Storms	1.02	0.000461%	\$30,100,242	\$11,950,000	*\$118	145	51 <18 29 >65 44 <Poverty	*\$50	13
Flooding	0.17	NA	\$30,100,242	\$11,950,000	\$10,804,634	20	1 <18 0 >65 1 <Poverty	0	0
Hazardous Materials	2.30	NA	\$30,100,242	\$11,950,000	\$4,655,258	22	1 <18 0 >65 1 <Poverty	\$11,335,000	12
Severe Wind	1.58	0.000463%	\$30,100,242	\$11,950,000	*\$183	145	51 <18 29 >65 44 <Poverty	*\$78	13
Landslides (Low Risk)	0.80	NA	\$30,100,242	\$11,950,000	\$6,010,004	18	1 <18 1 >65 1 <Poverty	\$500,000	1
Landslides (Medium Risk)	0.20	NA	\$30,100,242	\$11,950,000	\$18,171,222	87	3 <18 2 >65 3 <Poverty	\$10,735,000	10
Landslides (High Risk)	0.00	NA	\$30,100,242	\$11,950,000	\$3,832,138	29	1 <18 0 >65 1 <Poverty	\$115,000	1
Earthquake (HAZUS)	0.05	NA	\$30,100,242	\$11,950,000	\$96,394,327	145	-	\$26,071	13

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHEL DUS

**TABLE 4-11  
CITY OF PONDERAY HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$119,493,423	\$3,153,000	\$114,144,539	356	26 <18 12 >65 17 <Poverty	\$3,153,000	7
Winter Storms	1.02	0.000461%	\$119,493,423	\$3,153,000	*\$700	374	164 <18 74 >65 105 <Poverty	*\$69	7
Flooding	0.17	NA	\$119,493,423	\$3,153,000	\$12,390,173	42	2 <18 1 >65 1 <Poverty	\$513,000	2
Hazardous Materials	2.30	NA	\$119,493,423	\$3,153,000	\$29,028,556	55	8 <18 3 >65 5 <Poverty	\$3,153,000	7
Severe Wind	1.58	0.000463%	\$119,493,423	\$3,153,000	*\$1.,089	374	164 <18 74 >65 105 <Poverty	*\$107	7
Landslides (Low Risk)	0.00	NA	\$119,493,423	\$3,153,000	\$19,561,208	3	4 <18 2 >65 2 <Poverty	0	0
Landslides (Medium Risk)	0.33	NA	\$119,493,423	\$3,153,000	\$67,626,874	162	15 <18 7 >65 9 <Poverty	\$3,153,000	7
Landslides (High Risk)	0.00	NA	\$119,493,423	\$3,153,000	\$1,025,312	67	0 <18 0 >65 0 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$119,493,423	\$3,153,000	\$4,167,381,202	374	-	\$519,506	7

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELDDUS

**TABLE 4-12  
CITY OF PRIEST RIVER HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$581,356,758	\$68,929,000	\$274,158,185	1,317	71 <18 221 >65 298 <Poverty	\$68,929,000	24
Winter Storms	1.02	0.000461%	\$581,356,758	\$68,929,000	*\$745	3,212	507 <18 248 >65 335 <Poverty	*\$331	24
Flooding	0.17	NA	\$581,356,758	\$68,929,000	\$99,743,833	189	65 <18 32 >65 43 <Poverty	\$500,000	1
Hazardous Materials	2.30	NA	\$581,356,758	\$68,929,000	\$42,975,386	206	71 <18 35 >65 47 <Poverty	\$68,059,000	21
Severe Wind	1.58	0.000463%	\$581,356,758	\$68,929,000	*\$1,160	3,212	507 <18 248 >65 335 <Poverty	*\$516	24
Landslides (Low Risk)	0.28	NA	\$581,356,758	\$68,929,000	\$55,481,831	170	91 <18 45 >65 60 <Poverty	\$32,675,000	12
Landslides (Medium Risk)	0.72	NA	\$581,356,758	\$68,929,000	\$167,749,074	806	276 <18 135 >65 182 <Poverty	\$32,675,000	12
Landslides (High Risk)	0.00	NA	\$581,356,758	\$68,929,000	\$35,376,685	266	58 <18 28 >65 38 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$581,356,758	\$68,929,000	\$889,871,843	3,217	-	\$804,712	24

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELUDS

**TABLE 4-13  
CITY OF SANDPOINT HAZARD VULNERABILITY ASSESSMENT**

Hazard	Frequency	Magnitude	Total Building Stock \$	Total Critical Facility \$	Building \$ Annual Loss (*) or Building Stock Vulnerability	No. Buildings in Hazard Area	Societal Risk in Hazard Area	Critical Facility Annual Loss (*) or Building Stock Vulnerability	No. Critical Facilities in Hazard Area
Wildfire	77.00	NA	\$2,024,337,445	\$159,740,000	\$1,890,741,511	5,860	3,171 <18 2,713 >65 3,081 <Poverty	\$159,740,000	39
Winter Storms	1.02	0.000461%	\$2,024,337,445	\$159,740,000	*\$4,684	2,279	1,766 <18 1,056 >65 1,199 <Poverty	*\$638	39
Flooding	0.17	NA	\$2,024,337,445	\$159,740,000	\$876,922,536	906	595 <18 356 >65 404 <Poverty	\$13,190,000	4
Hazardous Materials	2.30	NA	\$2,024,337,445	\$159,740,000	\$374,176,872	586	1,026 <18 613 >65 695 <Poverty	\$114,015,000	29
Severe Wind	1.58	0.000463%	\$2,024,337,445	\$159,740,000	*\$7,288	2,279	1,766 <18 1,056 >65 1,199 <Poverty	*\$992	39
Landslides (Low Risk)	0.00	NA	\$2,024,337,445	\$159,740,000	\$341,491,224	194	709 <18 424 >65 481 <Poverty	\$158,340,000	35
Landslides (Medium Risk)	0.33	NA	\$2,024,337,445	\$159,740,000	\$1,256,985,655	4,247	2,896 <18 1,732 >65 1,966 <Poverty	\$1,700,000	5
Landslides (High Risk)	0.00	NA	\$2,024,337,445	\$159,740,000	\$62,125,831	1,119	137 <18 82 >65 93 <Poverty	0	0
Earthquake (HAZUS)	0.05	NA	\$2,024,337,445	\$159,740,000	\$73,302,388,419	5,860	-	\$40,353,064	39

NA = magnitude could not be computed since damage estimates from the hazard event was not available in SHELDDUS

<b>TABLE 4-14</b>		
<b>HAZUS EARTHQUAKE RISK ASSESSMENT LOSS ESTIMATES</b>		
<b>Jurisdiction</b>	<b>Building Stock Economic Loss \$</b>	<b>Critical Facility Economic Loss \$</b>
Clark Fork	\$453,339,582	\$71,412
Dover	\$1,433,875,215	\$1,509,805
East Hope	\$171,071,540	\$31,333
Hope	\$67,573,258	\$200,549
Kootenai	\$586,050,204	\$2,915,191
Oldtown	\$96,394,327	\$26,071
Ponderay	\$4,167,381,202	\$519,506
Priest River	\$889,871,843	\$804,712
Sandpoint	\$73,302,388,419	\$40,352,064
Bonner County	\$97,294,384,600	\$49,702,805

Note: Building stock loss for incorporated towns was based on census tract data.

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## 5.0 MITIGATION STRATEGY

Hazard mitigation, as defined by DMA 2000, is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The development of a mitigation strategy allows the community to create a vision for preventing future disasters, establish a set of mitigation goals, prioritize actions, and evaluate the success of such actions.

### 5.1 MITIGATION GOALS, OBJECTIVES AND ACTIONS

The AHM Plan goals describe the overall direction that Bonner County, city government, local agencies, organizations, and citizens can take to work toward mitigating risk from natural and technological hazards. Specific mitigation goals and projects were developed for Bonner County in conjunction with the Hazard Profile Survey, public meetings held in five communities and steering committee conference calls. A matrix developed for project ranking emphasizing cost-benefit and input from local officials was used to determine project prioritization. Mitigation objectives are consistent with strategies in the State of Idaho Hazard Mitigation Plan. The broad range of potential actions presented in **Appendix F** were considered, and below is a list of mitigation objectives and the actions (projects) identified by Bonner County as necessary to make their communities hardened against disaster. All projects may not be eligible for FEMA funding; however, Bonner County may secure alternate funding sources to implement these projects in the future. Project implementation and legal framework are discussed at the conclusion of this section.

Bonner County's capabilities to implement mitigation projects include community planners, engineers, floodplain managers, GIS personnel, emergency managers, financial and legal and regulatory (zoning, floodplain management ordinances) requirements. These resources have the responsibility to provide overview of past, current, and ongoing pre- and post-disaster mitigation planning projects including capital improvement programs, wildfire mitigation programs, stormwater management programs, and NFIP compliance projects. Following is a description of goals and objectives used to mitigate natural and technological hazards that builds on the community's existing capabilities.

TABLE 5-1 BONNER COUNTY MITIGATION STRATEGIES	
<b>Goal 1 - Reduce Impacts from All Hazards</b>	
	<i>Objective 1.1 - Obtain capital equipment to mitigate impacts from all hazards.</i>
	1.1.1 - Obtain a new repeater to improve communications in Priest Lake area.
	1.1.2 - Obtain a backup generator for repeater sites.
	1.1.3 - Obtain generators for emergency shelters and city/county critical facilities.
	1.1.4 - Obtain site surveillance equipment for repeater sites to reduce vandalism.
	<i>Objective 1.2 - Perform hazard management activities to mitigate impacts from all hazards</i>
	1.2.1 - Pre-stage response supplies in areas around the county.
	1.2.2 - Coordinate with Red Cross for designation of shelters.
	1.2.3 - Implement a reverse 911 system including cell phones for emergency notification.

**TABLE 5-1  
BONNER COUNTY MITIGATION STRATEGIES**

**Goal 1 - Reduce Impacts from All Hazards**

*Objective 1.2 - Perform hazard management activities to mitigate impacts from all hazards*

- 1.2.4 - Obtain early warning system (siren) for City of Priest River.
- 1.2.5 - Implement registry with fire districts for residents with special needs to assist with response.
- 1.2.6 - Obtain and install signage marking evacuation routes.
- 1.2.7 - Obtain necessary infrastructure for Blanchard Area to enhance public emergency communication.
- 1.2.8 - Install siren in Blanchard for emergency notification (early warning system).

*Objective 1.3 - Develop information/outreach and public education project to mitigate impacts from all hazards.*

- 1.3.1 - Implement a tabletop exercise to establish a list of needs for response to hazard events.
- 1.3.2 - Create an outreach brochure on evacuation procedures (including early notification information) targeted at locals and visitors.

*Objective 1.4 - Conduct mapping/analysis/planning projects to mitigate all hazards.*

- 1.4.1 - Work with cell phone company to get another tower that provides coverage to northwest corner of Priest Lake area.
- 1.4.2 - Create evacuation plan that addresses railroad stranding residents when crossings are blocked (there is one way in-one way out to many areas due to railroad and water e.g. Dover, Ponder Point).

*Objective 1.5 - Implement regulatory projects to mitigate impacts from all hazards.*

- 1.5.1 - Require underground power lines for new subdivisions.

**Goal 2 - Reduce Impacts from Wildfire**

*Objective 2.1 - Obtain capital equipment to mitigate impacts from wildfire.*

- 2.1.1 - Obtain trailer-mounted 1,000 gallon per minute pumps (3) which can be used at dry hydrants.
- 2.1.2 - Procure additional fire tenders for rural fire departments.

*Objective 2.2 - Construct infrastructure projects to mitigate impacts from wildfire.*

- 2.2.1 - Replace pipe across Pend Oreille River attached to Merritt bridge that is used for fire protection at the Stimson Mill.
- 2.2.2 - Construct new fire station at Lamb Creek.

*Objective 2.3 - Perform hazard management activities to mitigate impacts from wildfire.*

- 2.3.1 - Continue to fund the BONFIRE defensible space program.
- 2.3.2 - Install dry hydrants throughout the County as determined by local fire districts.
- 2.3.3 - Construct fire breaks in the following locations: East Side Road, back side of Hoo Doo, West Settlement Road north of Priest River, around Blanchard – Pole Line Road/Blanchard Cutoff Road, Schweitzer access road, Highway 57 between Priest River and Priest Lake, Gold Hill, Garfield Bay, South Grouse, Al's Welding Road, Hummingbird Land, Spirit Mountain, Hoodoo Mountain Road, Pine View Road, and Bear Road.
- 2.3.4 - Implement Hope Face fuel mitigation project.

*Objective 2.4 - Conduct mapping/analysis/planning projects to mitigate wildfire hazard*

- 2.4.1 - Investigate water supplies to fight wildfires.
- 2.4.2 - Create a GIS layer of the water sources in the county.
- 2.4.3 - Update GIS layer and incorporate Redzone software of areas where defensible space has been created through BONFIRE program.

*Objective 2.5 - Implement regulatory projects to mitigate impacts from wildfire.*

- 2.5.1 – Consider adoption of the International Fire Code to guide construction of new buildings, subdivisions and infrastructure.
- 2.5.2 – Consider adoption of the International Building Code to guide construction of new buildings, subdivisions, and infrastructure.
- 2.5.3 - Require County Planning Department to notify fire districts of new houses permitted for construction.
- 2.5.4 - Create stricter zoning ordinances whereby water supplies are mandatory for new subdivisions and not subject to variances by the local fire districts.
- 2.5.5 - Develop mutual aid agreements with Washington fire districts where local fire is closer to respond.

**TABLE 5-1  
BONNER COUNTY MITIGATION STRATEGIES**

**Goal 2 - Reduce Impacts from Wildfire**

*Objective 2.5 - Implement regulatory projects to mitigate impacts from wildfire.*

- 2.5.6 - Implement new land use code whereby individual homes (not within subdivisions) would be responsible for providing water supply for wildfire protection.
- 2.5.7 - Require all future subdivisions to have more than one ingress/egress route.
- 2.5.8 - Require that all future subdivisions have adequate water supply for structure protection.
- 2.5.9 - Require wider access roads to future subdivisions to accommodate fire fighting equipment.

**Goal 3 - Reduce Impacts from Winter Storms**

*Objective 3.1 - Perform hazard management activities to mitigate impacts from winter storms.*

- 3.1.1 - Perform retrofits on public buildings to withstand snow loads.
- 3.1.2 - Perform engineering study of public buildings to determine which may need retrofits to withstand snow loads.

*Objective 3.2 - Develop information/outreach and public education project to mitigate impacts from winter storms.*

- 3.2.1 - Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.
- 3.2.2 - Develop and distribute educational material on how to prepare for winter.

*Objective 3.2 - Develop information/outreach and public education project to mitigate impacts from winter storms.*

- 3.2.3 - Educate public on location of emergency shelters.
- 3.2.4 - Develop a resource list of people who shovel snow from roofs.

*Objective 3.3 - Implement regulatory projects to mitigate impacts from winter storms.*

- 3.3.1 - Implement a building code that requires roofs to be designed to withstand appropriate snow load.

**Goal 4 - Reduce Impacts from Flooding**

*Objective 4.1 - Construct infrastructure projects to mitigate impacts from flooding.*

- 4.1.1 - Replace Trestle Creek highway and railroad bridge.
- 4.1.2 - Re-engineer new waterline for City of Clark Fork to replace line obliterated by bridge replacement.
- 4.1.3 - Schneiders Road - Repair shoulder and armor slope along creek.
- 4.1.4 - Crosswhite Road - Perform geotechnical investigation and stabilize road bank along creek.
- 4.1.5 - Sanborn Creek Road - Perform hydrologic study and install larger culvert at Sanborn Creek crossing.
- 4.1.6 - Cavanaugh Bay Road - Replace wood structure with culvert or bridge at Soldier Creek.
- 4.1.7 - North Riley Creek Road - Replace double culverts with one larger culvert that will allow debris to flow through culvert.
- 4.1.8 - Johnsons Cutoff - Perform hydrologic study and install larger culvert.
- 4.1.9 - Grouse Creek Road - Rebuild channel on private land or install larger culvert at road to mitigate potential channel jump due to undersized culvert.
- 4.1.10 - Upper Gold Creek Road - Install larger culvert or bridge structure at Rapid Lightning Creek.
- 4.1.11 - Install larger culvert under Highway 41 at Blanchard.
- 4.1.12 - Replace Carter Creek bridge east of Hope on W. Spring Creek Road.
- 4.1.13 - Realign/widen La Clerc Creek Road.
- 4.1.14 - Ontario Street - Replace restricting culverts with slough bridges as originally constructed.

*Objective 4.2 - Perform hazard management activities to mitigate impacts from flooding.*

- 4.2.1 - Provide training for first responders.
- 4.2.2 - Install a French drain on the north side of the Blanchard Community Center.
- 4.2.3 - Perform debris cleanup on Strong Creek and Clark Fork River.
- 4.2.4 - Preposition supplies (sand bags) at Coolin Cove, south end of Priest Lake.
- 4.2.5 - Construct small levee at Trestle Creek.

**TABLE 5-1  
BONNER COUNTY MITIGATION STRATEGIES**

**Goal 4 - Reduce Impacts from Flooding**

*Objective 4.2 - Perform hazard management activities to mitigate impacts from flooding.*

- 4.2.6 - Implement stormwater abatement project of property City of Priest River will own along river which will become park (may be Superfund Site).
- 4.2.7 - Implement stormwater abatement project in Priest River bounded by 11th/Beardmore/Bodie Canyon/Highway 2 to mitigate flood hazard.
- 4.2.8 - Provide for better culvert maintenance in Blanchard.
- 4.2.9 - Rehabilitate 500-600 feet section of levee in Clark Fork.
- 4.2.10 - Perform feasibility study on what to do with railroad bridge and its affect on Trestle Creek.
- 4.2.11 - Rehabilitate 500-600 feet of Trestle Creek from highway down to lake.
- 4.2.12 - Perform rehabilitation on Trestle Creek upstream of highway to remove bedload and restore meanders.
- 4.2.13 - Construct the City of Kootenai Stormwater Master Plan.

*Objective 4.3 - Develop information/outreach and public education project to mitigate impacts from flooding*

- 4.3.1 - Disseminate information on county program on pre-positioned sand and sandbags to area residents.
- 4.3.2 - Disseminate information on floodplain management and participation in National Flood Insurance Program

*Objective 4.4 - Conduct mapping/analysis/planning projects to mitigate flooding.*

- 4.4.1 - Investigate stormwater project at Big Hill/Wellington Road.
- 4.4.2 - Investigate options to elevate or buy-out house on Star Lane which is below flood elevation and repeatedly floods.
- 4.4.3 - Identify structures/parcels located in the special flood management area.
- 4.4.4 - Update flood maps and flood data in compliance with National Flood Insurance Program

*Objective 4.5 - Implement regulatory projects to mitigate impacts from flooding.*

- 4.5.1 - Create a mitigation permit that will bypass much of the environmental review.
- 4.5.2 - Streamline permitting process with state for private parties to remove bedload.
- 4.5.3 - Adopt and enforce adequate floodplain management ordinances for existing and new development in special flood hazard areas.
- 4.5.4 - Incorporate elevation requirements into the permitting process for new or substantially improved properties and prepare elevation certificates, when necessary.
- 4.5.5 - Encourage City of Ponderay to participate in the National Flood Insurance Program.

**Goal 5 - Reduce Impacts from Hazardous Material Incidents**

*Objective 5.1 - Obtain capital equipment to mitigate impacts from hazardous material incidents.*

- 5.1.1 - Obtain haz-mat trailers (3) for Bonner County.
- 5.1.2 - Obtain decontamination trailers (2) that can be placed around county.
- 5.1.3 - Obtain boats (3) and equipment that could be used by the fire districts for haz-mat and fire purposes.

*Objective 5.2 - Construct infrastructure projects to mitigate impacts from hazardous material incidents.*

- 5.2.1 - Construct new bridge and west side access at Dover.

*Objective 5.3 - Perform hazard management activities to mitigate impacts from hazardous material incidents.*

- 5.3.1 - Update resource list of emergency response supplies/vendors.

*Objective 5.4 - Develop information/outreach and public education project to mitigate impacts from hazardous material incidents*

- 5.4.1 - Prepare outreach materials for locals and visitors on evacuation risks and procedures.

*Objective 5.5 - Conduct mapping/analysis/planning projects to mitigate hazardous material incidents.*

- 5.5.1 - Investigate Shingle Mill underpass for evacuation purposes.
- 5.5.2 - Investigate boat launch at Evergreen (near Morton) for evacuation purposes.

**TABLE 5-1  
BONNER COUNTY MITIGATION STRATEGIES**

**Goal 6 - Reduce Impacts from Severe Wind Events**

*Objective 6.1 - Conduct mapping/analysis/planning projects to mitigate severe wind events.*

6.1.1 - Develop a response plan for wind events.

**Goal 7 - Reduce Impacts from Landslides**

*Objective 7.1 - Construct infrastructure projects to mitigate impacts from landslides.*

7.1.1 - Kelso Lake Road - Perform geotechnical investigation prior to slope stabilization and potentially moving road away from slide area.

7.1.2 - Talache Road - Perform geotechnical investigation prior to slope stabilization in a couple areas and potentially moving road away from slide area.

7.1.3 - Bottle Bay Road - Potentially buy additional right-of-way and perform rock blasting and rock removal of upper slope.

7.1.4 - Old Priest River Road - Perform geotechnical investigation prior to slope stabilization.

7.1.5 - Dufort Road - Perform geotechnical investigation prior to slope stabilization.

7.1.6 - Peninsula Road - Perform geotechnical investigation on cut slopes prior to slope stabilization.

7.1.7 - E. River Road - Previously repaired but potentially may require purchase of land and slope stabilization in accordance with geotechnical recommendations.

7.1.8 - Eastshore Road - Perform geotechnical investigation prior to slope stabilization a several locations along road to reduce potential of rock above sliding on road.

7.1.9 - Denton Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.

7.1.10 - Johnson Creek Road - Acquire 404 Permit and install rip-rap stabilization along Clark Fork River and Johnson Creek.

7.1.11 - Lightning Creek Road - Install jersey rail along base of slide area.

7.1.12 - E. Spring Creek Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.

**Goal 8 - Reduce Impacts from Earthquakes**

*Objective 8.1 - Perform hazard management activities to mitigate impacts from earthquake hazard.*

8.1.1 - Implement non-structural projects in existing and future critical facilities.

8.1.2 - Implement structural retrofits on public buildings in Bonner County

8.1.3 - Implement seismic retrofit program for non-reinforced masonry structures in Priest River.

8.1.4 - Implement seismic retrofit program for non-reinforced masonry structures in Sandpoint.

*Objective 8.2 - Develop information/outreach and public education project to mitigate impacts from earthquakes.*

8.2.1 - Provide outreach to schools on what to do in an earthquake.

8.2.2 - Initiate earthquake drills in schools.

8.2.3 - Develop brochure and/or distribute video on how to respond if an earthquake occurs.

*Objective 8.3 - Conduct mapping/analysis/planning projects to mitigate earthquake hazard.*

8.3.1 - Conduct seismic evaluation of masonry buildings in Sandpoint.

8.3.2 - Conduct seismic evaluation of masonry buildings in Priest River.

**Goal 9 - Reduce Impacts from Avalanches**

*Objective 9.1 - Conduct mapping/analysis/planning projects to mitigate avalanche hazard.*

9.1.1 - Map and publicize hazard risk areas associated with avalanches (most of these are actually in Boundary County but accessible via Bonner County).

**Goal 10 - Reduce Impacts from Terrorism**

*Objective 10.1 - Perform hazard management activities to mitigate impacts from terrorism.*

10.1.1 - Investigate hardening security of community utility systems (water, sewer, and other municipal facilities).

## 5.2 PROJECT RANKING AND PRIORITIZATION

Each of the proposed projects has value; however, time and financial constraints do not permit all projects to be implemented immediately. By prioritizing the actions, the most critical, cost effective projects can be achieved in the short term.

A cost-benefit matrix was developed to rank the mitigation projects using the following criteria. Each project was assigned a “high”, “medium”, or “low” rank for *Population Impacted*, *Property Impacted*, *Project Feasibility* and *Cost*, as described below:

- For the *Population Impacted* category, a “high” rank represents greater than 50 percent of County residents; would be affected by implementation of the mitigation strategy; a “medium” rank represents 20 to 50 percent of County residents would be affected; and, a “low” rank represents less than 20 percent of County residents would be affected.
- For the *Property Protected* category, a “high” represents that greater than \$500,000 worth of property would be protected through implementation of the mitigation strategy; “medium” represents that \$100,000 to \$500,00 worth of property would be protected; and, “low” would be less than \$100,000 would be protected.
- For the *Project Feasibility* category a “high” rank represent that technology is available and implementation is likely; a “medium” rank indicates technology may be available but implementation could be difficult; and, a “low” rank represents that no technology is available or implementation would be unlikely.
- For the *Project Cost* category, a “high” represents that the mitigation project would cost more than \$500,000; a “medium” rank represents the project cost would be between \$100,000 and \$500,000; and, “low” represents the project would cost less than \$100,000.

The matrix was completed by assigning each rank a numeric value as follows:

TABLE 5-2 COST-BENEFIT SCORING MATRIX			
Scoring Criteria	High	Medium	Low
Population Impacted	3	2	1
Property Protected	3	2	1
Project Feasibility	3	2	1
Cost	1	2	3
TOTAL PROJECT SCORE	High = 12-10	Medium = 9-6	Low = 5-3

The overall cost-benefit was then calculated by summing the total score for each project. **Table 5-3** presents the Hazard Mitigation Project Cost-Benefit Matrix for Bonner County.

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
1 - Reduce Impacts from All Hazards	1.1 - Obtain capital equipment to mitigate impacts from all hazards.	1.1.1 - Obtain a new repeater to improve communications in Priest Lake area.	All Hazards	Priest Lake Area	Low	Low	High	Medium	Medium
		1.1.2 - Obtain a backup generator for repeater sites.	All Hazards	Bonner County	High	Low	High	Medium	Medium
		1.1.3 - Obtain generators for emergency shelters and city/county critical facilities.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Medium	High	High	Medium
		1.1.4 - Obtain site surveillance equipment for repeater sites to reduce vandalism.	All Hazards	Bonner County	High	Low	High	Medium	Medium
	1.2 - Perform hazard management activities to mitigate impacts from all hazards.	1.2.1 - Pre-stage response supplies in areas around the county.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Low	Low	High	Low	Medium
		1.2.2 - Coordinate with Red Cross for designation of shelters.	All Hazards	Bonner County	High	Low	High	Low	High
		1.2.3 - Implement a reverse 911 system including cell phones for emergency notification.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
		1.2.4 - Obtain early warning system (siren) for City of Priest River.	All Hazards	City of Priest River	Low	Low	High	Low	Medium
		1.2.5 - Implement registry with fire districts for residents with special needs to assist with response.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	Low	High	Low	Medium
		1.2.6 - Obtain and install signage marking evacuation routes.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	Low	High	Low	Medium
		1.2.7 - Obtain necessary infrastructure for Blanchard Area to enhance public emergency communication.	All Hazards	Blanchard Area	Low	Low	Medium	High	Low

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
1 - Reduce Impacts from All Hazards	1.2 - Perform hazard management activities to mitigate impacts from all hazards.	1.2.8 - Install siren in Blanchard for emergency notification (early warning system).	All Hazards	Blanchard Area	Low	High	High	Low	High
	1.3 - Develop information/outreach and public education project to mitigate impacts from all hazards.	1.3.1 - Implement a tabletop exercise to establish a list of needs for response to hazard events.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	High	High	Low	High
		1.3.2 - Create an outreach brochure on evacuation procedures (including early notification information) targeted at locals and visitors.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
	1.4 - Conduct mapping/analysis/planning projects to mitigate all hazards.	1.4.1 - Work with cell phone company to get another tower that provides coverage to northwest corner of Priest Lake area.	All Hazards	Priest Lake Area	Low	Low	Medium	Low	Medium
		1.4.2 - Create evacuation plan that addresses railroad stranding residents when crossings are blocked (there is one way in-one way out to many areas due to railroad and water e.g. Dover, Ponder Point).	All Hazards	Bonner County	High	Low	High	Low	High
	1.5 - Implement regulatory projects to mitigate impacts from all hazards.	1.5.1 - Require underground power lines for new subdivisions.	All Hazards	Bonner County	Low	High	Low	Low	Medium
	2.1 - Obtain capital equipment to mitigate impacts from wildfire.	2.1.1 - Obtain trailer-mounted 1,000 gallon per minute pumps (3) which can be used at dry hydrants.	Wildfire	Bonner County	High	High	High	Medium	High
	2.1 - Obtain capital equipment to mitigate impacts from wildfire.	2.1.2 - Procure additional fire tenders for rural fire departments.	Wildfire	Bonner County	Medium	High	Low	Low	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
2 - Reduce Impacts from Wildfire	2.2 - Construct infrastructure projects to mitigate impacts from wildfire.	2.2.1 - Replace pipe across Pend Oreille River attached to Merritt bridge that is used for fire protection at the Stimson Mill.	Wildfire	City of Priest River	Low	High	High	High	Medium
		2.2.2 - Construct new fire station at Lamb Creek.	Wildfire	Priest Lake Area	Low	High	High	Medium	Medium
	2.3 - Perform hazard management activities to mitigate impacts from wildfire.	2.3.1 - Continue to fund the BONFIRE defensible space program.	Wildfire	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Medium	High
		2.3.2 - Install dry hydrants throughout the County as determined by local fire districts.	Wildfire	Bonner County	High	High	High	Medium	High
		2.3.3 - Construct fire breaks in the following locations: East Side Road, back side of Hoo Doo, West Settlement Road north of Priest River, around Blanchard – Pole Line Road/Blanchard Cutoff Road, Schweitzer access road, Highway 57 between Priest River and Priest Lake, Gold Hill, Garfield Bay, South Grouse, Al's Welding Road, Hummingbird Land, Spirit Mountain, Hoodoo Mountain Road, Pine View Road, and Bear Road.	Wildfire	Unincorporated portion of Bonner County	Medium	High	High	High	Medium
		2.3.4 - Implement Hope Face fuel mitigation project.	Wildfire	Unincorporated portion of Bonner County	Low	High	High	Medium	Medium
	2.4 - Conduct mapping/analysis/planning projects to mitigate wildfire hazard	2.4.1 - Investigate water supplies to fight wildfires.	Wildfire	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	High	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
2 - Reduce Impacts from Wildfire	2.4 - Conduct mapping/analysis/planning projects to mitigate wildfire hazard	2.4.2 - Create a GIS layer of the water sources in the county.	Wildfire	Bonner County	High	High	High	Low	High
		2.4.3 - Update GIS layer and incorporate Redzone software of areas where defensible space has been created through BONFIRE program.	Wildfire	Bonner County	High	High	High	Low	High
	2.5 - Implement regulatory projects to mitigate impacts from wildfire.	2.5.1 – Consider adoption of the International Fire Code to guide construction of new buildings, subdivisions and infrastructure.	Wildfire	Bonner County	High	High	Low	Medium	Medium
		2.5.2 – Consider adoption of the International Building Code to guide construction of new buildings, subdivisions, and infrastructure.	Wildfire	Bonner County	High	High	Low	Medium	Medium
		2.5.3 - Require County Planning Department to notify fire districts of new houses permitted for construction.	Wildfire	Bonner County	Low	High	High	Low	High
		2.5.4 - Create stricter zoning ordinances whereby water supplies are mandatory for new subdivisions and not subject to variances by the local fire districts.	Wildfire	Bonner County	High	High	Medium	Low	High
		2.5.5 - Develop mutual aid agreements with Washington fire districts where local fire is closer to respond.	Wildfire	Blanchard Area	Low	High	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
2 - Reduce Impacts from Wildfire	2.5 - Implement regulatory projects to mitigate impacts from wildfire.	2.5.6 - Implement new land use code whereby individual homes (not within subdivisions) would be responsible for providing water supply for wildfire protection.	Wildfire	Bonner County	High	High	Low	Low	High
		2.5.7 - Require all future subdivisions to have more than one ingress/egress route.	Wildfire	Bonner County	High	High	Medium	Low	High
		2.5.8 - Require that all future subdivisions have adequate water supply for structure protection.	Wildfire	Bonner County	High	High	Medium	Low	High
		2.5.9 - Require wider access roads to future subdivisions to accommodate fire fighting equipment.	Wildfire	Bonner County	High	High	Medium	Low	High
3 - Reduce Impacts from Winter Storms	3.1 - Perform hazard management activities to mitigate impacts from winter storms.	3.1.1 - Perform retrofits on public buildings to withstand snow loads.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	High	High
		3.1.2 - Perform engineering study of public buildings to determine which may need retrofits to withstand snow loads.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Medium	High
	3.2 - Develop information/outreach and public education project to mitigate impacts from winter storms.	3.2.1 - Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Low	High
		3.2.2 - Develop and distribute educational material on how to prepare for winter.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
3 - Reduce Impacts from Winter Storms	3.2 - Develop information/outreach and public education project to mitigate impacts from winter storms	3.2.3 - Educate public on location of emergency shelters.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
		3.2.4 - Develop a resource list of people who shovel snow from roofs.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	High	High	Low	High
	3.3 - Implement regulatory projects to mitigate impacts from winter storms.	3.3.1 - Implement a building code that requires roofs to be designed to withstand an appropriate snow load.	Winter Storms	Bonner County	High	High	Medium	Low	High
4 - Reduce Impacts from Flooding	4.1 - Construct infrastructure projects to mitigate impacts from flooding.	4.1.1 - Replace Trestle Creek highway and railroad bridge.	Flooding	Unincorporated portion of Bonner County	Medium	High	High	High	Medium
		4.1.2 - Re-engineer new waterline for City of Clark Fork to replace line obliterated by bridge replacement.	Flooding	City of Clark Fork	Low	Medium	High	High	Medium
		4.1.3 - Schneiders Road - Repair shoulder and armor slope along creek.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Low	Medium
		4.1.4 - Crosswhite Road - Perform geotechnical investigation and stabilize road bank along creek.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		4.1.5 - Sanborn Creek Road - Perform hydrologic study and install larger culvert at Sanborn Creek crossing.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		4.1.6 - Cavanaugh Bay Road - Replace wood structure with culvert or bridge at Soldier Creek.	Flooding	Unincorporated portion of Bonner County	Medium	Low	High	High	Medium
		4.1.7 - North Riley Creek Road - Replace double culverts with one larger culvert that will allow debris to flow through culvert.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
4 - Reduce Impacts from Flooding	4.1 - Construct infrastructure projects to mitigate impacts from flooding.	4.1.8 - Johnsons Cutoff - Perform hydrologic study and install larger culvert.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Low	Medium
		4.1.9 - Grouse Creek Road - Rebuild channel on private land or install larger culvert at road to mitigate potential channel jump due to undersized culvert.	Flooding	Unincorporated portion of Bonner County	Medium	Medium	High	Medium	Medium
		4.1.10 - Upper Gold Creek Road - Install larger culvert or bridge structure at Rapid Lightning Creek.	Flooding	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		4.1.11 - Install larger culvert under Highway 41 at Blanchard.	Flooding	Blanchard Area	Medium	Medium	High	Medium	Medium
		4.1.12 - Replace Carter Creek bridge east of Hope on W. Spring Creek Road.	Flooding	Unincorporated portion of Bonner County	Low	Medium	High	Medium	Medium
		4.1.13 - Realign/widen La Clerc Creek Road.	Flooding	Unincorporated portion of Bonner County	Low	Medium	High	High	Medium
		4.1.14 - Ontario Street - Replace restricting culverts with slough bridges as originally constructed.	Flooding	City of Dover	Low	Medium	High	Medium	Medium
	4.2 - Perform hazard management activities to mitigate impacts from flooding.	4.2.1 - Provide training for first responders.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Low	Low	High	Low	Medium
		4.2.2 - Install a french drain on the north side of the Blanchard Community Center.	Flooding	Blanchard Area	Low	Medium	High	Low	Medium
		4.2.3 - Perform debris cleanup on Strong Creek and Clark Fork River.	Flooding	Unincorporated portion of Bonner County	Low	Medium	High	Medium	Medium
		4.2.4 - Preposition supplies (sand bags) at Coolin Cove, south end of Priest Lake.	Flooding	Priest Lake Area	Low	High	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
4 - Reduce Impacts from Flooding	4.2 - Perform hazard management activities to mitigate impacts from flooding.	4.2.5 - Construct small levee at Trestle Creek.	Flooding	Unincorporated portion of Bonner County	Low	High	High	High	Medium
		4.2.6 - Implement stormwater abatement project of property City of Priest River will own along river which will become park (may be Superfund Site).	Flooding	City of Priest River	Medium	High	Medium	High	Medium
		4.2.7 - Implement stormwater abatement project in Priest River bounded by 11th/Beardmore/Bodie Canyon/Highway 2 to mitigate flood hazard.	Flooding	City of Priest River	Low	High	High	High	Medium
		4.2.8 - Provide for better culvert maintenance in Blanchard.	Flooding	Blanchard Area	Low	Low	High	Low	Medium
		4.2.9 - Rehabilitate 500-600 feet section of levee in Clark Fork.	Flooding	City of Clark Fork	Low	High	High	High	Medium
		4.2.10 - Perform feasibility study on what to do with railroad bridge and its affect on Trestle Creek.	Flooding	Unincorporated portion of Bonner County	Low	High	High	Low	High
		4.2.11 - Rehabilitate 500-600 feet of Trestle Creek from highway down to lake.	Flooding	Unincorporated portion of Bonner County	Low	Medium	Low	High	Low
		4.2.12 - Perform rehabilitation on Trestle Creek upstream of highway to remove bedload and restore meanders.	Flooding	Unincorporated portion of Bonner County	Low	Medium	Low	High	Low
		4.2.13 - Construct the City of Kootenai Stormwater Master Plan	Flooding	City of Kootenai	Medium	High	High	High	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
4 - Reduce Impacts from Flooding	4.3 - Develop information/outreach and public education projects to mitigate impacts from flooding	4.3.1 - Disseminate information on county program on prepositioned sand and sandbags to area residents.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Low	High
		4.3.2 - Disseminate information on floodplain management and participation in National Flood Insurance Program	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Low	High
	4.4 - Conduct mapping/analysis/planning projects to mitigate flooding.	4.4.1 - Investigate stormwater project at Big Hill/Wellington Road.	Flooding	Unincorporated portion of Bonner County	Low	Medium	High	Medium	Medium
		4.4.2 - Investigate options to elevate or buy-out house on Star Lane which is below flood elevation and repeatedly floods.	Flooding	City of Ponderay	Low	Medium	High	Low	Medium
		4.4.3 - Identify structures/parcels located in the special flood management area.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Low	High	High	Low	High
		4.4.4 - Update flood maps and flood data in compliance with National Flood Insurance Program	Flooding	Bonner County, Sandpoint, Priest River, Clark Fork	High	High	Medium	Medium	High
	4.5 - Implement regulatory projects to mitigate impacts from flooding.	4.5.1 - Create a mitigation permit that will bypass much of the environmental review.	Flooding	Bonner County	Medium	Low	Low	Low	Medium
		4.5.2 - Streamline permitting process with state for private parties to remove bedload.	Flooding	Bonner County	Medium	Low	Low	Low	Medium
		4.5.3 - Adopt and enforce adequate floodplain management ordinances for existing & new development in special flood hazard areas	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Low	High	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
4 - Reduce Impacts from Flooding	4.5 - Implement regulatory projects to mitigate impacts from flooding.	4.5.4 - Incorporate elevation requirements into the permitting process for new or substantially improved properties and prepare elevation certificates, when necessary.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Low	High	Medium	Low	Medium
		4.5.5 - Encourage City of Ponderay to participate in the National Flood Insurance Program.	Flooding	City of Ponderay	Low	High	Medium	Low	Medium
5 - Reduce Impacts from Hazardous Material Incidents	5.1 - Obtain capital equipment to mitigate impacts from hazardous material incidents.	5.1.1 - Obtain haz-mat trailers (3) for Bonner County.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Medium	High	High	Medium	High
		5.1.2 - Obtain decontamination trailers (2) that can be placed around county.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
		5.1.3 - Obtain boats (3) and equipment that could be used by the fire districts for haz-mat and fire purposes.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	High	High
	5.2 - Construct infrastructure projects to mitigate impacts from hazardous material incidents.	5.2.1 - Construct new bridge and west side access at Dover.	Hazardous Materials	City of Dover	High	Low	High	High	Medium
	5.3 - Perform hazard management activities to mitigate impacts from hazardous material incidents.	5.3.1 - Update resource list of emergency response supplies/vendors.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
	5.4 - Develop information/outreach and public education project to mitigate impacts from hazardous material incidents	5.4.1 - Prepare outreach materials for locals and visitors on evacuation risks and procedures.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
5 - Reduce Impacts from Hazardous Material Incidents	5.5 - Conduct mapping/analysis/planning projects to mitigate hazardous material incidents.	5.5.1 - Investigate Shingle Mill underpass for evacuation purposes.	Hazardous Materials	City of Sandpoint	Low	Low	High	Low	Medium
		5.5.2 - Investigate boat launch at Evergreen (near Morton) for evacuation purposes.	Hazardous Materials	Unincorporated portion of Bonner County	Low	Low	High	Low	Medium
6 - Reduce Impacts from Severe Wind Events	6.1 - Conduct mapping/analysis/planning projects to mitigate severe wind events.	6.1.1 - Develop a response plan for wind events.	Wind	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
7 - Reduce Impacts from Landslides	7.1 - Construct infrastructure projects to mitigate impacts from landslides.	7.1.1 - Kelso Lake Road - Perform geotechnical investigation prior to slope stabilization and potentially moving road away from slide area.	Landslide	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		7.1.2 - Talache Road - Perform geotechnical investigation prior to slope stabilization in a couple areas and potentially moving road away from slide area.	Landslide	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		7.1.3 - Bottle Bay Road - Potentially buy additional right-of-way and perform rock blasting and rock removal of upper slope.	Landslide	Unincorporated portion of Bonner County	Medium	Low	High	High	Medium
		7.1.4 - Old Priest River Road - Perform geotechnical investigation prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Medium	Low	High	Medium	Medium
		7.1.5 - Dufort Road - Perform geotechnical investigation prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Medium	Low	High	Medium	Medium
		7.1.6 - Peninsula Road - Perform geotechnical investigation on cut slopes prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Medium	Low	High	Medium	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
7 - Reduce Impacts from Landslides	7.1 - Construct infrastructure projects to mitigate impacts from landslides.	7.1.7 - E. River Road - Previously repaired but potentially may require purchase of land and slope stabilization in accordance with geotechnical recommendations.	Landslide	Unincorporated portion of Bonner County	Low	Medium	High	High	Medium
		7.1.8 - Eastshore Road - Perform geotechnical investigation prior to slope stabilization a several locations along road to reduce potential of rock above sliding on road.	Landslide	Unincorporated portion of Bonner County	Medium	Low	High	Medium	Medium
		7.1.9 - Denton Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Landslide	Unincorporated portion of Bonner County	Low	High	High	High	Medium
		7.1.10 - Johnson Creek Road - Acquire 404 permit and install Rip Rap stabilization along Clark Fork River and Johnson Creek.	Landslide	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium
		7.1.11 - Lightning Creek Road - Install jersey rail along base of slide area.	Landslide	Unincorporated portion of Bonner County	Low	Low	High	Low	Medium
		7.1.12 - E. Spring Creek Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Landslide	Unincorporated portion of Bonner County	Low	Low	High	Medium	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
8 - Reduce Impacts from Earthquakes	8.1 - Perform hazard management activities to mitigate impacts from earthquake hazard.	8.1.1 - Implement non-structural projects in existing and future critical facilities.	Earthquake	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	Low	High
		8.1.2 - Implement structural retrofits on public buildings in Bonner County	Earthquake	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	High	High	High	High
		8.1.3 - Implement seismic retrofit program for non-reinforced masonry structures in Priest River.	Earthquake	City of Priest River	Low	High	Medium	High	Medium
		8.1.4 - Implement seismic retrofit program for non-reinforced masonry structures in Sandpoint.	Earthquake	City of Sandpoint	Medium	High	Medium	High	Medium
8 - Reduce Impacts from Earthquakes	8.2 - Develop information/outreach and public education project to mitigate impacts from earthquakes.	8.2.1 - Provide outreach to schools on what to do in an earthquake.	Earthquake	BC, C, D, E, H, K, O, PO, PL, PR, S	Medium	Low	High	Low	Medium
		8.2.2 - Initiate earthquake drills in schools.	Earthquake	BC, C, D, E, H, K, O, PO, PL, PR, S	Medium	High	High	Medium	High
		8.2.3 - Develop brochure and/or distribute video on how to respond if an earthquake occurs.	Earthquake	BC, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
	8.3 - Conduct mapping/analysis/planning projects to mitigate earthquake hazard.	8.3.1 - Conduct seismic evaluation of masonry buildings in Sandpoint.	Earthquake	City of Sandpoint	Medium	High	High	Medium	High
		8.3.2 - Conduct seismic evaluation of masonry buildings in Priest River.	Earthquake	City of Priest River	Low	High	High	Low	High
9 - Reduce Impacts from Avalanche Hazard	9.1 - Conduct mapping/analysis/planning projects to mitigate avalanche hazard.	9.1.1 - Map and publicize hazard risk areas associated with avalanches (most of these are actually in Boundary County but accessible via Bonner Co.).	Avalanche	Bonner County	Low	Low	High	Low	Medium

**TABLE 5-3  
BONNER COUNTY COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS**

Goal	Objective	Project	Hazard(s) Mitigated	Jurisdiction(s)	Population Impacted	Property Protected	Project Feasibility	Cost	Cost/Benefit Ranking
10 - Reduce Impacts from Terrorism	10.1 - Perform hazard management activities to mitigate impacts from terrorism.	10.1.1 - Investigate hardening security of community utility systems (water, sewer or other municipal facilities).	Terrorism	BC, B, C, D, E, H, K, O, PO, PL, PR, S	High	Low	High	Low	High
<b>JURISDICTIONS:</b> BC = Bonner County; B = Blanchard; C = Clark Fork; D = Dover; E = East Hope; H = Hope; K = Kootenai; O = Oldtown; PO = Ponderay; PL = Priest Lake; PR = Priest River; S = Sandpoint									
<b>POPULATION IMPACTED</b>	<b>PROPERTY PROTECTED</b>	<b>PROJECT FEASIBILITY</b>		<b>PROJECT COST</b>		<b>COST/BENEFIT RANKING</b>			
High = > 50% of County residents	High = > \$500,000	High = Technology available and implementation likely		High = > \$500,000		High = 10 to 12			
Medium = 20 to 50% of County residents	Medium = \$100,000 to \$500,000	Medium = Technology may be available but implementation could be difficult		Medium = \$100,000 to \$500,000		Medium = 6 to 9			
Low = < 20% County residents	Low = < \$100,000	Low = No technology available or implementation unlikely		Low = < \$100,000		Low = 3 to 5			

Projects identified by Bonner County as top priorities are presented in **Table 5-4**. The prioritization of the projects serves as a guide for choosing and funding projects; however, depending on the funding sources, some actions may be best achieved outside the priorities established here.

### 5.3 PROJECT FUNDING

Although a number of the mitigation projects listed in *Section 5.1* may not be eligible for FEMA funding, Bonner County may secure alternate funding sources to implement these projects in the future including federal and state grant programs, and funds made available through the County. Alternate funding sources may include the following:

**U.S. Department of Housing and Urban Development, Community Development Block Grants.** The CDBG program is a flexible program that provides communities with resources to address a wide range of unique community development needs. More Information:

<http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

**U.S. Bureau of Land Management, Rural Fire Assistance Program.** BLM provides funds to rural fire department for wildfire fighting; also provides wildland fire equipment, training and/or prevention materials.

**U.S. Bureau of Land Management, Communities at Risk Program.** Assistance to communities for hazardous fuels reduction projects in the wildland urban interface; includes funding for assessments and mitigation planning.

**U.S. Department of Homeland Security.** Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include, but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders, and Homeland Security Grants. More information: <http://www.dhs.gov/dhspublic/>

**FEMA, Hazard Mitigation Grant Program (HMGP).** The HMGP provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. <http://www.fema.gov/government/grant/hmgrp/>

**FEMA, Pre-Disaster Mitigation (PDM) Grant Program.** The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing

reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. More information: <http://www.fema.gov/government/grant/pdm/index.shtm>

**FEMA, Flood Mitigation Assistance (FMA) Grant Program.** The FMA program was created as part of the National Flood Insurance Reform Act of 1994 with the goal of reducing or eliminating claims under the National Flood Insurance Program. FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program. More information: <http://www.fema.gov/government/grant/fma/index.shtm>

**FEMA, Repetitive Flood Claims (RFC) Program.** The RFC grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968. Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the National Flood Insurance Program. More information: <http://www.fema.gov/government/grant/rfc/index.shtm>

**FEMA, Severe Repetitive Loss (SRL) Program.** The SRL grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program. More information: <http://www.fema.gov/government/grant/srl/index.shtm>

**National Fire Plan, State Fire Assistance Hazard Mitigation Program.** These special state Fire Assistance funds are targeted at hazardous fuel treatments in the wildland-urban interface. Recipients include state forestry organization, local fire services, county emergency planning committees and private landowners. More information: [www.fireplan.gov](http://www.fireplan.gov)

**Fire Management Assistance Program** is authorized under Section 420 of the Stafford Act. It allows for the mitigation, management, and control of fires burning on publicly or privately owned forest or grasslands that threaten destruction that would constitute a major disaster. More information: <http://www.bhs.idaho.gov/Pages/DisasterAssistance/FMAP.aspx>

**U.S. Department of Agriculture, Community Facilities Loans and Grants.** Provides grants (and loans) to cities, counties, states and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services; funds have been provided to purchase fire-fighting equipment for rural areas. No match is required. More information: <http://rurdev.usda.gov>; or local county Rural Development office.

**TABLE 5-4  
BONNER COUNTY HIGH PRIORITY MITIGATION PROJECTS AND POTENTIAL FUNDING SOURCES**

<b>County Priority</b>	<b>Cost/Benefit Ranking</b>	<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Jurisdiction(s)</b>	<b>Possible Funding Sources</b>
High	High	1.3.1 - Implement a tabletop exercise to establish a list of needs for response to hazard events.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	FEMA
High	Medium	1.1.1 - Obtain a new repeater to improve communications in Priest Lake area.	All Hazards	Priest Lake Area	Homeland Security.
High	Medium	1.1.2 - Obtain a backup generator for repeater sites.	All Hazards	Bonner County	Homeland Security, Federal Surplus Bureau
High	Medium	1.1.3 - Obtain generators for emergency shelters and city/county critical facilities.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Homeland Security. Federal Surplus Bureau
High	Medium	1.1.4 - Obtain site surveillance equipment for repeater sites to reduce vandalism.	All Hazards	Bonner County	Homeland Security. Federal Surplus Bureau
High	Medium	1.2.1 - Pre-stage response supplies in areas around the county.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County, Red Cross, Homeland Security
High	High	1.4.2 - Create evacuation plan that addresses railroad stranding residents when crossings are blocked (there is one way in-one way out to many areas due to railroad and water e.g. Dover, Ponder Point).	All Hazards	Bonner County	Homeland Security
High	High	1.3.2 - Create an outreach brochure on evacuation procedures (including early notification information) targeted at locals and visitors.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County
High	High	1.2.2 - Coordinate with Red Cross for designation of shelters.	All Hazards	Bonner County	Red Cross
High	High	1.2.3 - Implement a reverse 911 system including cell phones for emergency notification.	All Hazards	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County
High	High	2.4.2 - Create a GIS layer of the water sources in the county.	Wildfire	Bonner County	Bonner County
High	High	2.4.3 - Update GIS layer and incorporate Redzone software of areas where defensible space has been created through BONFIRE program.	Wildfire	Bonner County	Bonner County
High	High	2.3.1 - Continue to fund the BONFIRE defensible space program.	Wildfire	Bonner County	Bonner County
High	High	2.3.2 - Install dry hydrants throughout the County as determined by local fire districts.	Wildfire	Bonner County	Homeland Security.
High	Medium	2.5.1 – Consider adoption of the International Fire Code to guide construction of new buildings, subdivisions and infrastructure.	Wildfire	Bonner County	Bonner County

**TABLE 5-4  
BONNER COUNTY HIGH PRIORITY MITIGATION PROJECTS AND POTENTIAL FUNDING SOURCES**

<b>County Priority</b>	<b>Cost/Benefit Ranking</b>	<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Jurisdiction(s)</b>	<b>Possible Funding Sources</b>
High	Medium	2.5.2 – Consider adoption of the International Building Code to guide construction of new buildings, subdivisions, and infrastructure.	Wildfire	Bonner County	Bonner County
High	Medium	2.3.3 - Construct fire breaks in the following locations: East Side Road, back side of Hoodoo, West Settlement Road north of Priest River, around Blanchard – Pole Line Road/Blanchard Cutoff Road, Schweitzer access road, Highway 57 between Priest River and Priest Lake, Gold Hill, Garfield Bay, South Grouse, Al's Welding Road, Hummingbird Land, Spirit Mountain, Hoodoo Mountain Road, Pine View Road, and Bear Road.	Wildfire	Unincorporated portion of Bonner County	National Fire Plan
High	High	2.5.3 - Require County Planning Department to notify fire districts of new houses permitted for construction.	Wildfire	Bonner County	Bonner County
High	High	3.2.1 - Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	FEMA, National Weather Service
High	High	3.3.1 - Implement a building code that requires roofs to be designed to withstand an appropriate snow load.	Winter Storms	Bonner County	Bonner County
High	High	3.2.2 - Develop and distribute educational material on how to prepare for winter.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County, National Weather Service, Red Cross
High	High	3.1.1 - Perform retrofits on public buildings to withstand snow loads.	Winter Storms	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County, Homeland Security
High	Medium	4.1.1 - Replace Trestle Creek highway and railroad bridge.	Flooding	Bonner County	Idaho Transportation Dept, Federal Dept of Transportation, Montana Rail Link
High	Medium	4.1.2 - Re-engineer new waterline for City of Clark Fork to replace line obliterated by bridge replacement.	Flooding	City of Clark Fork	Corps of Engineers Grant w/ 25% match, City of Clark Fork.
High	Medium	4.1.3 - Schneiders Road - Repair shoulder and armor slope along creek.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.4 - Crosswhite Road - Perform geotechnical investigation and stabilize road bank along creek.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.5 - Sanborn Creek Road - Perform hydrologic study and install larger culvert at Sanborn Creek crossing.	Flooding	Unincorporated portion of Bonner County	Bonner County

**TABLE 5-4  
BONNER COUNTY HIGH PRIORITY MITIGATION PROJECTS AND POTENTIAL FUNDING SOURCES**

<b>County Priority</b>	<b>Cost/Benefit Ranking</b>	<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Jurisdiction(s)</b>	<b>Possible Funding Sources</b>
High	Medium	4.1.6 - Cavanaugh Bay Road - Replace wood structure with culvert or bridge at Soldier Creek.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.7 - North Riley Creek Road - Replace double culverts with one larger culvert that will allow debris to flow through culvert.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.8 - Johnsons Cutoff - Perform hydrologic study and install larger culvert.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.9 - Grouse Creek Road - Rebuild channel on private land or install larger culvert at road to mitigate potential channel jump due to undersized culvert.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.10 - Upper Gold Creek Road - Install larger culvert or bridge structure at Rapid Lightning Creek.	Flooding	Unincorporated portion of Bonner County	Bonner County
High	Medium	4.1.14 - Ontario Street - Replace restricting culverts with slough bridges as originally constructed.	Flooding	City of Dover	City of Dover
High	Medium	4.2.5 - Construct small levee at Trestle Creek.	Flooding	Unincorporated portion of Bonner County	Corps of Engineers, Idaho Water Resources
High	Medium	4.2.13 - Construct City of Kootenai Stormwater Master Plan	Flooding	City of Kootenai	City of Kootenai
High	High	4.3.2 - Disseminate information on floodplain management and participation in National Flood Insurance Program	Flooding	Bonner County	Bonner County
High	High	4.4.3 - Identify structures/parcels located in the special flood management area.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County
High	High	4.4.4 - Update flood maps and flood data in compliance with National Flood Insurance Program	Flooding	Bonner County, Sandpoint, Priest River, Clark Fork	Bonner County, Sandpoint, Priest River, Clark Fork
High	High	4.5.3 - Adopt and enforce adequate floodplain management ordinances for existing and new development in special flood hazard areas.	Flooding	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County
High	Medium	5.2.1 - Construct new bridge and west side access at Dover.	Hazardous Materials	City of Dover	Idaho Transportation Department
High	High	5.1.1 - Obtain haz-mat trailers (3) for Bonner County.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Homeland Security
High	High	5.1.3 - Obtain boats (3) and equipment that could be used by the fire districts for haz-mat and fire purposes.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Homeland Security
High	High	5.3.1 - Update resource list of emergency response supplies/vendors.	Hazardous Materials	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Bonner County

**TABLE 5-4  
BONNER COUNTY HIGH PRIORITY MITIGATION PROJECTS AND POTENTIAL FUNDING SOURCES**

<b>County Priority</b>	<b>Cost/Benefit Ranking</b>	<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Jurisdiction(s)</b>	<b>Possible Funding Sources</b>
High	High	6.1.1 - Develop a response plan for wind events.	Wind	BC, B, C, D, E, H, K, O, PO, PL, PR, S	FEMA, National Weather Service
High	Medium	7.1.1 - Kelso Lake Road - Perform geotechnical investigation prior to slope stabilization and potentially moving road away from slide area.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.2 - Talache Road - Perform geotechnical investigation prior to slope stabilization in a couple areas and potentially moving road away from slide area.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.3 - Bottle Bay Road - Potentially buy additional right-of-way and perform rock blasting and rock removal of upper slope.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.4 - Old Priest River Road - Perform geotechnical investigation prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.5 - Dufort Road - Perform geotechnical investigation prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.6 - Peninsula Road - Perform geotechnical investigation on cut slopes prior to slope stabilization.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.7 - E. River Road - Previously repaired but potentially may require purchase of land and slope stabilization in accordance with geotechnical recommendations.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.8 - Eastshore Road - Perform geotechnical investigation prior to slope stabilization a several locations along road to reduce potential of rock above sliding on road.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.9 - Denton Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.10 - Johnson Creek Road - Acquire 404 Permit and install rip-rap stabilization along Clark Fork River and Johnson Creek.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.11 - Lightning Creek Road - Install jersey rail along base of slide area.	Landslide	Unincorporated portion of Bonner County	Bonner County
High	Medium	7.1.12 - E. Spring Creek Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Landslide	Unincorporated portion of Bonner County	Bonner County

**TABLE 5-4  
BONNER COUNTY HIGH PRIORITY MITIGATION PROJECTS AND POTENTIAL FUNDING SOURCES**

<b>County Priority</b>	<b>Cost/Benefit Ranking</b>	<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Jurisdiction(s)</b>	<b>Possible Funding Sources</b>
High	High	8.1.1 - Implement non-structural projects in existing and future critical facilities.	Earthquake	BC, B, C, D, E, H, K, O, PO, PL, PR, S	FEMA
High	High	8.1.2 - Implement structural retrofits on public buildings in Bonner County	Earthquake	BC, B, C, D, E, H, K, O, PO, PL, PR, S	FEMA
High	High	10.1.1 - Investigate hardening security of community utility systems (water, sewer or other municipal facilities).	Terrorism	BC, B, C, D, E, H, K, O, PO, PL, PR, S	Homeland Security
<b>JURISDICTIONS:</b> BC = Bonner County; B = Blanchard; C = Clark Fork; D = Dover; E = East Hope; H = Hope; K = Kootenai; O = Oldtown; PO = Ponderay; PL = Priest Lake; PR = Priest River; S = Sandpoint					

**General Services Administration, Sale of Federal Surplus Personal Property.** This program sells property no longer needed by the federal government. The program provides individuals, businesses and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased. More information: [www.gsa.gov](http://www.gsa.gov)

**FEMA, U.S. Fire Administration, Reimbursement for Firefighting on Federal Property.** Program provides reimbursement to fire service organizations that have engaged in firefighting operations on federal land. Payments can be for direct expenses and direct losses. More information: [www.fema.gov](http://www.fema.gov)

**FEMA, Readiness, Response and Recovery Directorate, Fire Management Assistance Grant Program.** Program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request. More information: [www.fema.gov](http://www.fema.gov)

**National Association of Conservation Districts, Catalog of Selected Federal Grants and Assistance Supporting the National Fire Plan.** Catalog lists a full range of potential funding sources for wildfire prevention projects and is organized into specific categories such as protection of communities and homes, equipment acquisition, revegetation, and fuels reduction. More information: <http://forestry.nacdnet.org>

**Emergency Management Performance Grants (EMPG).** The EMPG grant program provides \$291,450,000 million to assist State and local governments to sustain and enhance all-hazards emergency management capabilities. More information: <http://www.bhs.idaho.gov/Pages/Grants/EmergencyManagementPerformanceGrants.aspx>

**Hazardous Materials Emergency Preparedness Grants.** Grant funds will be passed through to local emergency management offices and HazMat teams having functional and active LEPC's. More information: <http://www.bhs.idaho.gov/Pages/Grants/HazardousMaterialsEmergencyPreparednessGrant.aspx>

**Public Safety Interoperable Communications (PSIC) Grants.** The PSIC Grant Program will provide funding to States and Territories to enable and enhance public safety agencies' interoperable communications capabilities. More information: <http://www.bhs.idaho.gov/Pages/Grants/PublicSafetyInteroperableCommunicationsGrant.aspx>

**FY2009 Emergency Operations Center (EOC) Grant Program** is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, and interoperable EOCs with a focus on addressing identified deficiencies and needs. The EOC Grant Program is authorized by section 614 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Funding in the amount of \$34,002,500 is available for grants for construction or renovation of a State, local, or tribal government's principal EOCs. More information: <http://www.bhs.idaho.gov/Pages/Grants/FY09EOCGrant.aspx>

Cooperating organizations for project implementation may include local, county, or regional agencies that are capable of, or responsible for, implementing activities and programs. The Bonner County Department of Emergency Management director will be responsible for mitigation project administration. Other departments and agencies responsible for mitigation project implementation are identified in **Table 5-5** along with a project implementation schedule.

## 5.4 LEGAL FRAMEWORK

A number of federal, state and local regulations and policies form the legal framework available to implement Bonner County's hazard mitigation goals and projects. A list of these regulations and plans is presented below. *Section 6.2* describes ways hazard mitigation can be integrated into existing programs.

### **Federal**

- The Federal Civil Defense Act of 1950
- Public Law 96-342, The Improved Civil Defense Act of 1980
- Public Law 91-606, Disaster Relief Act
- Public Law 93-288, The Robert T. Stafford Disaster Relief Act of 1974.
- Presidential Executive Order 11988, Floodplain Management
- Presidential Executive Order 11990, Protection of Wetlands

### **State of Idaho**

- Idaho State Code Title 46, Chapter 10, State Disaster Preparedness Act
- Idaho State Code Title 39, Chapter 71, Hazardous Material Act
- Governor's Executive Order 2000-04, April 20, 2000

### **Local**

- Bonner County Land Use Regulations, Title 12, Chapter 6, Subdivisions
- Bonner County Land Use Regulations, Title 12, Subchapter 7.1 Shorelines
- Bonner County Land Use Regulations, Title 12, Subchapter 7.2 Grading, Stormwater Management and Erosion Control
- Bonner County Land Use Regulations, Title 12, Subchapter 7.3, Wetlands

**TABLE 5-5  
BONNER COUNTY PLANNING MECHANISMS AND PROJECT IMPLEMENTATION**

<b>County Priority</b>	<b>Project</b>	<b>Local Planning Mechanism</b>	<b>Incorporation into Planning Mechanism</b>	<b>Responsible for Implementation</b>	<b>Implementation Steps</b>	<b>Implementation Schedule</b>
High	1.3.1 - Implement a tabletop exercise to establish a list of needs for response to hazard events.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. Dept. Emergency Management	Identify players who need to be there. Design table top. Secure venue. Determine date.	Year 1-2
High	1.1.1 - Obtain a new repeater to improve communications in Priest Lake area.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. 911	Identify location. Identify type of equipment needed. Identify funding source.	Year 1-2
High	1.1.2 - Obtain a backup generator for repeater sites.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. 911	Identify funding source. Identify equipment size based on power needs. Take bids on installation.	Year 1-2
High	1.1.3 - Obtain generators for emergency shelters and city/county critical facilities.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. Dept. Emergency Management	Identify funding source. Identify critical infrastructure that needs the power. Identify size needed. Take bids on installation.	Year 3-4
High	1.1.4 - Obtain site surveillance equipment for repeater sites to reduce vandalism.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. 911	Identify funding source. Identify equipment needs. Take bids on installation.	Year 1-2
High	1.2.1 - Pre-stage response supplies in areas around the county.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. Dept. Emergency Management	Needs assessment what equipment pre-staged where. Identify funding sources.	Year 1-5
High	1.4.2 - Create evacuation plan that addresses railroad stranding residents when crossings are blocked (there is one way in-one way out to many areas due to railroad and water e.g. Dover, Ponder Point).	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. Dept. Emergency Management	Funding in place. Hire contractor. Adopt plan.	Year 1
High	1.3.2 - Create an outreach brochure on evacuation procedures (including early notification information) targeted at locals and visitors.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Bonner Co. Dept. Emergency Management	Hire Contractor to design brochure. Print and distribute.	Year 1
High	1.2.2 - Coordinate with Red Cross for designation of shelters.	Bonner County Emergency Operations Plan	Staff Revision/ Commissioner Approval	Red Cross	Identify task force to work with Red Cross. Get agreements in place for use of facilities as shelters. Advertise location of shelters to public.	Year 1

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High	1.2.3 - Implement a reverse 911 system including cell phones for emergency notification.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. 911	Technology is in place. Need to secure funding for monthly costs. Update infrastructure.	Year 3-4
High	2.4.2 - Create a GIS layer of the water sources in the county.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	BONFIRE	Collect and maintain data source (BONFIRE), Bonner Co. GIS Dept. (manage data).	Year 1-5
High	2.4.3 - Update GIS layer and incorporate Redzone software of areas where defensible space has been created through BONFIRE program.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	BONFIRE	Continue collection of data (BONFIRE). Turn data over to Bonner Co. GIS & Dept. Lands GIS to manage.	Year 1-5
High	2.3.1 - Continue to fund the BONFIRE defensible space program.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	BONFIRE	Pursue all funding sources.	Year 1-5
High	2.3.2 - Install dry hydrants throughout the County as determined by local fire districts.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management & BONFIRE	Conduct needs assessment to identify potential locations. BONFIRE catalog locations. BONFIRE to prepare grant. Put together bid specifications. Hire contractor.	Year 1-5
High	2.5.1 – Consider adoption of the International Fire Code to guide construction of new buildings, subdivisions and infrastructure.	Create Bonner County Ordinance	Commissioner Approval	Bonner Co. Commissioners	Conduct public hearing process. Adopt by commissioners.	Year 1-5
High	2.5.2 – Consider adoption of the International Building Code to guide construction of new buildings, subdivisions, and infrastructure.	Create Bonner County Ordinance	Commissioner Approval	Bonner Co. Commissioners	Conduct public hearing process. Adopt by commissioners.	Year 1-5
High	2.3.3 - Construct fire breaks in the following locations: East Side Road, back side of Hoo Doo, West Settlement Road north of Priest River, around Blanchard – Pole Line Rd/Blanchard Cutoff Rd, Schweitzer access road, Hwy 57 between Priest River and Priest Lake, Gold Hill, Garfield Bay, South Grouse, Al's Welding Rd, Hummingbird Ln, Spirit Mountain, Hoodoo Mountain Rd, Pine View Rd, and Bear Rd.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	BONFIRE	Identify ownership. Secure funding. Write contract with owner to do the work. Put together bid specifications. Hire contractor.	Year 1-5

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High	2.5.3 - Require County Planning Department to notify fire districts of new houses permitted for construction.	Bonner County WUI Fire Mitigation Plan	Commissioner Approval/ Staff Revision	Bonner Co. Planning & Zoning	Write an ordinance. Public hearing. Adopt by commissioners.	Year 1-5
High	3.2.1 - Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Initial meeting with NWS. Secure funding. Research availability of training materials. Provide training. Distribute videos.	Year 1
High	3.3.1 - Implement a building code that requires roofs to be designed to withstand an appropriate snow load.	Create Bonner County Ordinance	Commissioner Approval	Bonner Co. Commissioners	Secure funding for engineering services. Contract with engineer to draft building code. Promote proposed code change through public outreach. Obtain commissioner approval.	Year 1-3
High	3.2.2 - Develop and distribute educational material on how to prepare for winter.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Meet with National Weather Service and Red Cross. Develop brochure. Print, upload to website and otherwise distribute.	Year 1-2
High	3.1.1 - Perform retrofits on public buildings to withstand snow loads.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	County, Cities, School Districts	Identify projects. Secure funding. Hire contractor to design retrofits. Implement.	Year 1-5
High	4.1.1 - Replace Trestle Creek highway and railroad bridge.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Idaho Transportation Dept. & Montana Rail Link	Bring stakeholders to the table on project status. Assist with permits.	Schedule determined by ITD.
High	4.1.2 - Re-engineer new waterline for City of Clark Fork to replace line obliterated by bridge replacement.	Bonner County Comprehensive Plan	City Council Approval/ Staff Revision	City of Clark Fork	Work with ITD on design and schedule. Identify source of matching funds.	Year 1
High	4.1.3 - Schneiders Road - Repair shoulder and armor slope along creek.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2
High	4.1.4 - Crosswhite Road - Perform geotechnical investigation and stabilize road bank along creek.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4

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High	4.1.5 - Sanborn Creek Road - Perform hydrologic study and install larger culvert at Sanborn Creek crossing.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2
High	4.1.6 - Cavanaugh Bay Road - Replace wood structure with culvert or bridge at Soldier Creek.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 2-3
High	4.1.7 - North Riley Creek Road - Replace double culverts with one larger culvert that will allow debris to flow through culvert.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4
High	4.1.8 - Johnsons Cutoff - Perform hydrologic study and install larger culvert.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 4-5
High	4.1.9 - Grouse Creek Road - Rebuild channel on private land or install larger culvert at road to mitigate potential channel jump due to undersized culvert.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2
High	4.1.10 - Upper Gold Creek Road - Install larger culvert or bridge structure at Rapid Lightning Creek.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4
High	4.1.14 - Ontario Street - Replace restricting culverts with slough bridges as originally constructed	City of Dover Transportation Plan	Mayor and City Council Approval/ Staff Revision	City of Dover Public Works	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4

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High	4.2.5 - Construct small levee at Trestle Creek.	Bonner County Comprehensive Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Identify location and ownership. Secure funding source. Hire contractor for design.	Year 3-4
High	4.2.13 – Construct City of Kootenai Stormwater Master Plan	City of Kootenai Comprehensive Plan/Capital Improvement Plan	Mayor and City Council Approval/ Staff Revision	City of Kootenai Public Works	Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-5
High	4.3.2 - Disseminate information on floodplain management and participation in National Flood Insurance Program	Bonner County Floodplain/Zoning Ordinances	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Planning	Coordinate with NFIP specialists to develop information. Copy and/or print materials. Distribute to targeted audience and at local events.	Year 1-5
High	4.4.3 - Identify structures/parcels located in the special flood management area.	Bonner County Floodplain/Zoning Ordinances	Commission Approval/Staff Revision	Bonner County Dept. Planning	Consult County land plats. Determine parcel/ property ownership. Consider land use restrictions.	Year 1-2
High	4.4.4 - Update flood maps and flood data in compliance with National Flood Insurance Program	Bonner Co. and cities of Sandpoint, Priest River & Clark Fork Floodplain/ Zoning Ordinances	Commissioner and/or Mayor/City Council Approval/ Staff Revision	Bonner Co. Dept. Planning and City Floodplain Managers	Secure funding. Identify mapping and data needs. Contract with floodplain specialist. Amend floodplain ordinances.	Year 1-5
High	4.5.3 - Adopt and enforce adequate floodplain management ordinances for existing and new development in special flood hazard areas.	Bonner County Floodplain Ordinance	Commission Approval/Staff Revision	Bonner County Dept. Planning	Provide training for new staff. Enhance map modernization efforts. Implement enforcement protocols.	Year 1-5
High	5.2.1 - Construct new bridge and west side access at Dover.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co./ Idaho Transportation Dept.	Coordinate with ITD.	Year 1-5
High	5.1.1 - Obtain haz-mat trailers (3) for Bonner County.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Secure funding. Put together specifications for what is needed. Procure and deploy.	Year 1-2
High	5.1.3 - Obtain boats (3) and equipment that could be used by the fire districts for haz-mat and fire purposes.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Secure funding. Put together specifications for what is needed. Procure and deploy.	Year 1-2
High	5.3.1 - Update resource list of emergency response supplies/vendors.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Develop and publicize list. Keep list updated.	Year 1-5

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High	6.1.1 - Develop a response plan for wind events.	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Initial meeting with NWS. Identification of planning partners. Plan development with contractor assistance.	Year 1-5
High	7.1.1 - Kelso Lake Road - Perform geotechnical investigation prior to slope stabilization and potentially moving road away from slide area.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2
High	7.1.2 - Talache Road - Perform geotechnical investigation prior to slope stabilization in a couple areas and potentially moving road away from slide area.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 2-3
High	7.1.3 - Bottle Bay Road - Potentially buy additional right-of-way and perform rock blasting and rock removal of upper slope.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Acquire right-of-way. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 4-5
High	7.1.4 - Old Priest River Road - Perform geotechnical investigation prior to slope stabilization.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2

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High	7.1.5 - Dufort Road - Perform geotechnical investigation prior to slope stabilization.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 2-3
High	7.1.6 - Peninsula Road - Perform geotechnical investigation on cut slopes prior to slope stabilization.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4
High	7.1.7 - E. River Road - Previously repaired but potentially may require purchase of land and slope stabilization in accordance with geotechnical recommendations.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Acquire right-of-way. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 4-5
High	7.1.8 – Eastshore Road - Perform geotechnical investigation prior to slope stabilization a several locations along road to reduce potential of rock above sliding on road.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 5-6
High	7.1.9 - Denton Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 1-2
High	7.1.10 - Johnson Creek Road - Acquire 404 Permit and install rip-rap stabilization along Clark Fork River and Johnson Creek.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 2-3
High	7.1.11 - Lightning Creek Road - Install jersey rail along base of slide area.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 3-4

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High	7.1.12 - E. Spring Creek Road - Perform geotechnical investigation prior to slope stabilization in a couple areas.	Bonner County Transportation Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. Road & Bridge	Contract with engineering firm to perform initial investigation and study. Secure funding. Prepare contract documents and bid specifications and acquire necessary permits. Bid and complete project.	Year 4-5
High	8.1.1 - Implement non-structural projects in existing and future critical facilities.	Bonner County Capital Improvement Plan	Commissioner Approval/ Staff Revision	Bonner Co. 911	Identify projects (what treatment is and at which locations). Develop bid package. Hire contractor to implement.	Year 3-4
High	8.1.2 - Implement structural retrofits on public buildings in Bonner County.	Bonner County Capital Improvement Plan	Commissioner Approval/ Staff Revision	City Engineers	Identify projects. Secure funding. Hire contractor to design retrofits. Implement.	Year 1-5
High	10.1.1 - Investigate hardening security of community utility systems (water, sewer or other municipal facilities).	Bonner County Emergency Operations Plan	Commissioner Approval/ Staff Revision	Bonner Co. Dept. Emergency Management	Conduct needs survey of existing systems. Investigate possible options. Consider costs and contracting options.	Year 1-5

- Bonner County Land Use Regulations, Title 12, Subchapter 7.5 Flood Damage Prevention
- Bonner County Land Use Regulations, Title 12, Subchapter 7.6 Hillsides
- Bonner County Comprehensive Plan (2002)
- Bonner County Emergency Operations Plan (2004)
- Bonner County Wildland/Urban Interface Fire Mitigation Plan (2004, updated 2007)
- City of Sandpoint Comprehensive Plan (2009)
- City of Sandpoint Code, Title 8 Building Regulations, Chapter 4 Flood Damage Prevention
- City of Sandpoint Code, Title 11 Development Regulations

## 6.0 PLAN MAINTENANCE PROCEDURES

The Plan Maintenance section of this document details the formal process that will ensure that the Bonner County AHM Plan remains an active and relevant document. The maintenance process includes a schedule for monitoring and evaluating the Plan and producing a Plan revision every five years. This section describes how the County will integrate public participation throughout the Plan maintenance process. Also included in this section is an explanation of how Bonner County intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms.

### 6.1 MONITORING, EVALUATING AND UPDATING THE PLAN

The Bonner County AHM Plan will be reviewed every two years, or as deemed necessary by knowledge of new hazards, vulnerabilities, or other pertinent reasons. The review will determine whether a Plan update is needed prior to the required five year update. The Plan review will document completed mitigation projects, identify new mitigation projects and evaluate the mitigation priorities and existing programs. There have been no repetitive losses associated with hazards identified in Bonner County. Should repetitive losses be subsequently identified during the plan maintenance reviews, applicable strategies will be formulated to address and mitigate them.

The Bonner County DEM director will be responsible for scheduling a meeting of the AHM Plan Steering Committee and Local Emergency Planning Committee (LEPC) to evaluate the significance of the Plan. The meeting will be open to the public and advertised in the local newspaper to solicit public input. The AHM Plan Steering Committee and LEPC will evaluate each section of the plan and implementation of mitigation projects. The Bonner County DEM director will prepare a status report summarizing the outcome of the plan evaluation meeting and post it on the Bonner County website to update local citizens.

Three years after adoption of the Plan, the Bonner County DEM director will apply for a planning grant through FEMA to update the Plan. Upon receipt of funding, Bonner County will solicit bids in accordance with county contracting procedures and hire a contractor to assist with the Plan update. The proposed schedule for completion of the Plan update is one year from award of a contract, to coincide with the five year adoption date of the original AHM Plan.

The Bonner County DEM director will be responsible for the five year Plan update. The update will bring the Plan up to date and incorporate new or more accurate information. Upon completion, the updated Plan will submit the updated Plan to the Board of County Commissioners, incorporated jurisdictions and public for review and adoption. Before the end of the five-year period, the updated Plan will be submitted to the State Hazard Mitigation Officer and FEMA for approval. The Bonner County DEM director will notify all holders of the AHM PLAN when changes have been made. An e-mail will be sent to individuals and organizations

on the AHM Plan stakeholder's list to inform them that the updated plan is available on the Bonner County website.

## 6.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Bonner County will have the opportunity to implement hazard mitigation projects through existing programs and procedures through plan revisions or amendments. **Appendix B** contains Plan Review Worksheets which identify existing plans and programs in Bonner County and the incorporated towns of Sandpoint, Clark Fork, Dover, East Hope, Hope, Kootenai, Oldtown, Ponderay, and Priest River. The AHM Plan will be incorporated into these plans as they are updated in the future or when new plans are developed. Update of the Plan Review Worksheets will be part of the biannual (or as necessary) review of the AHM Plan.

Examples of how the AHM Plan can be implemented through existing programs include:

- Hazards and risks addressed in new or updated Emergency Operations Plans should be consistent with those identified in the AHM Plan.
- Goals and policies identified in new or updated Comprehensive Plans should include those identified in the AHM Plan.
- Projects listed in new or updated Capital Improvement Plans should include those identified in the AHM Plan.
- Projects listed in new or updated Stormwater Management Plans should include those identified in the AHM Plan.
- Adopt building codes to reduce the effects of hazards identified in the AHM Plan.
- Adopt or update zoning ordinances that would reduce, restrict, or provide regulatory guidance for development in hazard areas.
- Partner with other organizations and agencies with similar goals to adopt and/or promote building codes that are more disaster resistant.
- Develop incentives for local governments, citizens, and businesses to pursue hazard mitigation projects.
- Allocate County resources and assistance for mitigation projects.
- Partner with other organizations and agencies in the Idaho Panhandle to support hazard mitigation activities.

Both Bonner County and the City of Sandpoint use a Comprehensive Plan to guide and control development. The Comprehensive Plan has a Hazardous Area Component that addresses hazards; specifically, that life and property be protected from natural disasters and man-caused hazards. Mitigation goals in the AHM Plan will be recommended for incorporation into these planning documents to ensure that high-hazard areas are being considered for low risk uses.

Currently, there is no Building Department in Bonner County to adopt building codes that can be enforced in unincorporated portions of the county where growth is taking place or in

incorporated cities without building codes. Lack of a Building Department and building codes will be a deterrent accomplishing some of the mitigation strategies outlined in the AHM Plan. The Bonner County DEM director and LEPC will encourage and work with the Board of County Commissioners to adopt building codes and establish a Building Department during the five-year cycle of this AHM Plan. The Commissioners have indicated that they will consider adopting building codes in the future that are adequate to mitigate or prevent damage by natural hazards and to ensure that life-safety criteria are met for new construction.

The majority of the incorporated cities within Bonner County have building codes enforced by their local Building and/or Planning Departments. These codes ensure that life-safety criteria are met for new construction and to mitigate or prevent damage by natural hazards within the city limits.

To ensure that the requirements of the AHM Plan are incorporated into other planning mechanisms and remain an on-going concern in Bonner County, job descriptions of various staff will be enhanced to include a mitigation component. The job description of the Bonner County DEM director will be modified to include responsibilities for implementing outreach activities for risk reduction in the County, coordinating with the Board of County Commissioners to secure funding for mitigation projects, implementing mitigation project, and updating the AHM Plan.

Meetings of the Board of County Commissioners will provide an opportunity for local officials to report back on the progress made on the integration of mitigation planning elements into County planning documents and procedures.

### 6.3 CONTINUED PUBLIC INVOLVEMENT

Bonner County is dedicated to involving the public directly in review and updates of the AHM Plan. The public will have many opportunities to provide feedback about the Plan. Hard copies of the Plan will be kept at appropriate city/county offices as well as at the public libraries. An electronic copy of the AHM Plan will be available on the Bonner County website. The existence and location of these Plan copies will be publicized in the local newspapers. Information about the Plan will be provided at monthly LEPC meeting. *Section 2.0* includes the address and the phone number of the Bonner County DEM director who is responsible for keeping track of public comments on the Plan.

A series of public meetings will also be held prior to the five year update, or at lesser intervals when deemed necessary by the Board of County Commissioners and/or LEPC. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The Bonner County DEM director will be responsible for using county resources to publicize the public meetings and maintain public involvement through the newspapers, radio and internet.

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## 7.0 REFERENCES

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- Federal Emergency Management Agency (FEMA), 1987c.** Flood Insurance Study. Bonner County, Idaho Unincorporated Areas. February 1, 1984 revised August 4, 1987.
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